

REVIEW OF ORDERS AND REGULATIONS REQUIRING ENVIRONMENTAL PROTECTION

**E. Kelly¹
R. Cunningham²
D. Michael³**

**¹Probabilistic Risk and Hazard Analysis Group
Technology and Safety Assessment Division
Los Alamos National Laboratory Los Alamos, New Mexico**

**²SAIC
Washington, DC**

**³Neptune and Company
Los Alamos, New Mexico**

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INTRODUCTION

With the increased awareness of and interest in potential ecological risks associated with past, current, and future Department of Energy (DOE) activities, DOE's Defense Programs (DP) Office of Technical and Environmental Support sponsored a study to (1) evaluate the effectiveness of the current compliance-driven environmental protection and assessment efforts relative to ecological concerns; (2) explore the need for a more focused, integrated approach to address ecological impacts; and (3) identify the requirements for an integrated approach. The study explored four questions.

- Which federal regulations and DOE orders either explicitly require ecological assessments or implicitly require them through environmental protection language?
- What currently is being done at selected DOE facilities to implement these regulations and orders?
- What are private sector industries doing in terms of ecological risk assessments and how do industry approaches and issues compare with those of DOE?
- What, if anything, in addition to current efforts is needed to ensure the protection of ecological resources associated with DOE facilities, to support defensible decision making, and to improve efficiency?

The results of this study are presented in a report titled "Integrated, Comprehensive Ecological Impact Assessments In Support of Department of Energy Decision Making" (Kelly et al., 1996). This report is a companion document to that report. This report provides a more detailed discussion of the document reviews of the relevant environmental protection regulations and current and pending DOE orders. The main goal of the document reviews was to understand existing requirements for ecological data collection and impact assessments.

DOCUMENT REVIEWS

The document reviews focused on five areas.

1. Stated purpose of the regulation or order
2. Intent of the regulation or order with respect to environmental protection, for example:
 - How is environment defined?
 - Are ecological resources implicitly or explicitly included in the definition of environment?
 - What (if any) ecological resources are targeted?
 - What language is used to describe environmental protection or the evaluation of environmental risks or impacts?
 - What are the requirements for environmental protection?
 - What guidance, if any, is given for including environmental and/or ecological concerns in the decision-making process?
 - Is the order, regulation, or guidance clear or confused on the issue of what is meant by environmental protection and how environmental concerns will affect the decision-making process?
3. The minimal compliance requirements, for example, identification of required reports and/or monitoring activities
4. Identification of the decisions explicitly or implicitly required by the regulation or order relative to environmental protection, particularly protection of ecological resources
5. Identification of decision makers and the role of the public in decision making

Table 1 lists the various orders and regulations that were reviewed and the page where the review can be found.

TABLE 1
ORDERS AND REGULATIONS REVIEWED AND PAGE NUMBER OF REVIEW

Item	Page
DOE Order 5400.1: General Environmental Protection Program; 11-9-88; Change 6-29-90	5
DOE Order 5400.5: Radiation Protection of the Public and the Environment; 2-8-90; Change 1: 6-5-90; Change 2: 1-7-93	8
Draft 10 CFR Part 834: Radiation Protection of the Public and the Environment; no date	10
10 CFR 834 vs 5400.5: Radiation Protection of the Public and the Environment	12
DOE Order 5400.2A: Environmental Compliance Issue Coordination Order; 1-31-89	13
DOE Order 5480.23: Nuclear Safety Analysis Reports; Effective Date 4-30-92	14
DOE-STD-3009-94: Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports; July 1994	17
DOE Order 6430.1A: General Design Criteria; 4-6-89	19
DOE Order 5480.1B: Environment, Safety, and Health Program for Department of Energy Operations; 9-23-86	21
40 CFR Part 1500—Purpose, Policy, and Mandate	23
40 CFR Part 1501—NEPA and Agency Planning	25
40 CFR Part 1502—Environmental Impact Statement	27
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DOE Order 5440.1E: National Environmental Policy Act Compliance Program (11-10-92) with Respect to Ecological Impact Assessment Project	40
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The Draft Land and Facility Use Management Document (Draft DOE Order 4310)	44
Endangered Species Act	47
DOE Order 5400.4 (10-6-89)	51
42 U.S.C. PART 11—Natural Resource Damage Assessments	53
Executive Order No. 11514: Protection and Enhancement of Environmental Quality; 3-5-70	56
Executive Order No. 11987: Exotic Organisms; 5-24-77	58
Executive Order No. 11988: Floodplain Management; 5-24-88	59
Executive Order No 11990: Protection of Wetlands; 5-24-77	60

DOE ORDER 5400.1
GENERAL ENVIRONMENTAL PROTECTION PROGRAM; 11-9-88; CHANGE 6-29-90

Purpose

Stated Purpose: “To establish *environmental protection program requirements*, authorities, and responsibilities for Department of Energy (DOE) operations for assuring compliance with applicable Federal, state, and local environmental protection laws and regulations, Executive orders, and internal Department policies. The Order more specifically defines environmental protection requirements that are generally established in DOE 5480.1B.” (“Environment, Safety and Health Program for Department of Energy Operations”)

Intent with Respect to Environmental Protection

The spirit and intent of this Order is to outline and establish protocols where appropriate, for environmental protection standards, notification and reports procedures, environmental protection program plans, and environmental monitoring requirements that DOE must comply with as required by 5480.1B. It is also stated that this Order “addresses and, of necessity, emphasizes requirements for radiation protection.” (5. Policy, b.) The policy section of this Order further states:

- “Protection of the environment and the public are responsibilities of paramount importance and concern to DOE...”
- “To that end, DOE is firmly committed to ensuring incorporation of national environmental protection goals in the formulation and implementation of DOE programs. It has an equal commitment to advance the goals of restoring and enhancing environmental quality, and ensuring public health.”
- “...Environmental protection practices will, of necessity, be carried out at the levels and locations where many DOE activities are performed by its management and operating contractors.” (5. Policy, a.,b.)

Within this document, there are references to applicable DOE Orders, Legislation, Executive Orders, and other pertinent documents. Responsibilities and authorities have been delegated to the Deputy Secretary; the Assistant Secretary for Environmental, Safety, and Health; Program Senior Officials; the General Counsel, Assistant Secretary; Management and Administration; Heads of Field Organizations; and the Director, Naval Nuclear Propulsion Program, in addition to those described in DOE 5480.1B. The Responsibilities and Authorities section outlines the administrative mechanisms that are to be followed; however, a slightly more detailed approach is used in the subsequent sections to elaborate on activities addressed by this Order.

- An explicit definition of environment can be found in the definition for environmental surveillance. Per this definition, environment encompasses “air, water, soil, foodstuff, biota, and other media from DOE sites and their environs for the purpose of determining compliance with applicable standards and permit requirements, assessing radiation exposures of members of the public and assessing the effects, if any, on the local environment.” (8. Definitions, f.)
- Ecological resources are included in this Order explicitly via the definition of environmental surveillance (see above). Resources to be targeted in monitoring plans are effluents, e.g., air emissions and/or liquid discharges and air, water, soil, foodstuff, and biota, as discussed for environmental surveillance.
- Language is contained in this document for notification of non-routine releases from DOE operations, in addition to meeting reporting requirements for DOE 5000.3A. However, “releases of no environmental concern, including those that are subsequently cleaned up, need not be reported.” (Chapter 2, 5.,b.) There is no definition or criteria listed that outline what is or is not of environmental concern. Regarding the implementation plan, while there is language stating that “DOE facilities were operated and managed in a manner that will protect, maintain, and, where necessary, restore environmental quality, minimize potential threats to the environment...” (Chapter 3, 2.), there is no further explanation as to what constitutes environmental quality and potential threats.
- Requirements for environmental protection come into play with the specific programs that are to be developed and implemented through this Order. These include: groundwater protection management and waste minimization programs. As is addressed through these programs, they are to refer to other, more specific Acts for environmental protection and monitoring guidelines - Safe Drinking Water Act, Clean Air Act, RCRA, CERCLA, 40 CFR Part 60, etc.
- Within the context of this Order, there are stated provisions for utilizing environmental monitoring data contained in the outline of duties for various officials. Monitoring data is to be used for verifying compliance with Order(s) requirements.

- Regarding this Order being clear as to what is environmental protection and environmental concerns affecting the decision-making process, there is language in this Order stating that the various plans and programs will be aware of protecting the environment from potential threats and dangerous releases. All environmental data collected is done as a mechanism to verify regulatory compliance. If the data quantify non-compliance via documentation of pollutants and/or hazardous materials in the environment above what is expected or acceptable, then strategies will be devised whereby this non-compliance can be remedied.

Compliance Requirements

Chapters 3 and 4 outline the minimal compliance requirements. Further specified in this Order is that monitoring programs developed will be site-specific. The following are for the environmental protection program plans required by the Order:

- Implementation plan: designed to meet the requirements of this order by providing “management direction, including assignment of responsibilities and authorities, to ensure that all DOE facilities are operated and managed in a manner that will protect, maintain, and where necessary, restore environmental quality, minimize potential threats to the environment and the public health, and comply with environmental regulations and DOE policies.” (Chapter 3, 2.)
- Long range environmental protection plan: “each field organization shall develop a long range environmental protection plan that comprehensively defines specific environmental objectives and the means and schedules for attaining objectives and completing programs and projects at each facility or group of facilities.” (Chapter 3, 3.) This plan is to list the requirements the facility must meet, and then outline the strategies the facility should follow in order to meet those requirements. There is discussion outlining the steps to be taken for this type of plan. This plan is outlined to only address regulatory requirements. There is no discussion for long range planning pertinent to the environment.
- Annual site environmental report: “...present summary environmental data so as to characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts.” These reports are to be prepared “for all sites that conduct significant environmental protection programs.” (Chapter 2, 4.,a.)
- Environmental monitoring plans: different attribute monitoring includes: meteorological, radiological, and non-radiological.
- Groundwater protection management program
- Waste minimization program
- Pollution prevention awareness program
- Preoperational monitoring of facilities, sites and operations

The following are those for the environmental monitoring programs required by this Order:

- Preoperational monitoring of facilities, sites and operations:
 - An environmental study will be done prior to “start up of a new site, facility, or process which has the potential for significant adverse environmental impact.”
 - This study should begin 1-2 years before start up for seasonal evaluation.
 - “Where appropriate, activities and documentation conducted for NEPA compliance may substitute for compliance with this requirement (Chapter 4,3.).
- Environmental monitoring plans:
 - Monitoring plan will be prepared “for each site, facility, or process that uses, generates, releases, or manages significant pollutants or hazardous materials.” (Chapter 4,4.)
 - This plan will identify and discuss 2 major activities: 1) effluent monitoring and 2) environmental surveillance.
 - Within these monitoring programs, meteorological and radiation monitoring are also conducted.

Relevant Decisions

The relevant questions that appear to be addressed by this Order pertain to the verification of compliance activities and to conduct environmental surveillance for determining whether or not pollutants and/or hazardous materials have entered the environment of a facility, site or operational area. Specific plans for action are included in the Groundwater Protection Management Program. Within this program, an outline is provided that addresses contaminated areas and provides for “strategies for controlling sources of these contaminants” (Chapter 3,4.,a.).

Decision Makers

DOE environmental management activities are externally “regulated by EPA, State, and local environmental agencies.” (6. Applicability, b.). Specifically, it is the Program Senior Official who is responsible for reviewing and approving the Implementation Plan and the Long Range Environmental Protection Plan. The Head of Field Organization is responsible for preparing appropriate plans for the special programs that must be developed for this Order. The Head of Field Organization is also responsible for the environmental monitoring plans addressed through this Order.

DOE ORDER 5400.5
RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT; 2-8-90;
CHANGE 1: 6-5-90; CHANGE 2: 1-7-93

Purpose

“To establish standards and requirements for operations of the Department of Energy (DOE) and DOE contractors with respect to protection of members of the public and the environment against undue risk from radiation.” It is further stated that the background of this Order is “... to integrate, consolidate, and update the portions of DOE 5480.1A that addressed public and environmental radiation protection standards and control practices.” (Chapter 1, 1. Background)

Intent with Respect to Environmental Protection

The spirit and intent of this Order is to implement radiation protection guidelines and activities primarily for the public and the environment. Within this Order, specifics are given for radiation levels to which the public will be exposed, as well as identifying particular ecosystems to be monitored and protected. DOE objectives per this Order are:

- “Protecting the Public. ...to operate its facilities and conduct its activities so that radiation exposures to members of the public (emphasis added) are maintained within the limits established in this Order and to control radioactive contamination through the management of real and personal property.”
- “Protecting the Environment. ...To protect the environment from radioactive contamination to the extent practical (emphasis added).” (6. Objectives)

This order establishes responsibilities and authorities for the Secretary; the Assistant Secretary for Environmental, Safety, and Health; Program Secretarial Officers; Heads of Field Elements; and the Director, Naval Nuclear Propulsion Program, in addition to those described in DOE 5480.1B and DOE 5400.1. Administrative mechanisms that are to be followed are outlined. Issues of discretion and/or judgment for the Secretary are discussed. This section acknowledges the use of discretion and judgment in fulfilling the requirements of this Order.

- A definition of environment can be found in the definition for environmental surveillance. Per this definition, environment encompasses “air, water, soil, foodstuff, biota, and other media from DOE sites and their environs and the measurement of external radiation for purposes of demonstrating compliance with applicable standards, assessing radiation exposures of members of the public and assessing effects, if any, on the local environment.” (10. Definitions, f.)
- Ecological resources are directly referred to in the “Protection of Resources” section of Liquid Wastes and Effluents. Here, ecological resources are identified as “land, ground and surface water, and ecosystems.” (Chapter 1, 5. Liquid Wastes and Effluents, a.) In Chapter 2, 3. Management and control of Radioactive Materials in Liquid Discharges and Phase-out of Soil Columns, ecological resources are further defined as “land, surface water, ground water and the related ecosystems”. Also within this section is a discussion of the “Interim Dose Limit for Native Aquatic Animal Organisms.” In this section, there is the identification of a radiological dose limit for these particular organisms.
- Language is contained in this document for monitoring and the assessment of routine and non-routine releases from DOE operations. There is much language throughout this Order referring to the monitoring of both public and environmental exposure to radiological releases. Further language specifically addresses environmental protection via “the phasing out of the use of soil columns and the additional requirements associated with the burial of low-level radioactive wastes”. These specified activities are designed “to address concerns with potential long-term contamination of the environment on and near DOE activities and sites. These requirements are intended to prevent the buildup of contamination in soils and ground water and to protect the environment from the spread of contamination from burial trenches and pits.” (Chapter 1,6. Environmental Protection)
- Requirements for environmental protection are specifically addressed in this Order, however, they primarily pertain to humans. For example, in the All Exposure Modes, Sources from Management and Storage of Spent Nuclear Fuel, High-Level, and Transuranic Wastes at Disposal Facilities (Chapter 2,1..c.), dose limits are discussed in reference to humans:

- “To the extent required by 40 CFR Part 191, the exposure of members of the public to direct radiation or radioactive material released from DOE management and storage activities at a disposal facility for spent nuclear material or for high-level or transuranic radioactive wastes that are not regulated by the NRC shall not cause members of the public to receive, in a year, a dose equivalent greater than 25 mrem (0.25 mSv) to the whole body or a committed dose equivalent greater than 75 mrem (0.75 mSv) to any organ.”

These exposure limits are further defined to comply with those standards set out in other regulations such as the Clean Air Act, 40 CFR Part 61, Subpart H, 40 CFR Part 141, “National Interim Primary Drinking Water Regulations (Safe Drinking Water Act)”, etc.

- Within the context of this Order, there are stated provisions for utilizing environmental monitoring data for verifying compliance with Order requirements (Chapter 1.8.,a.) and to document and provide quantitative data regarding unplanned radioactive releases. This information is also to be used for assessing and verifying that a facility is operating within its specified guidelines.
- This Order is relatively clear as far as environmental protection and these concerns in the decision-making process. Dose limits are specified primarily with the environment acting as a medium by which the public will potentially be exposed to radiation.

Compliance Requirements

Primarily, this Order requires reporting any DOE activities that may have resulted in non-compliance with the requirements. According to Chapter 4, 2. Implementation, the various DOE and their subsidiaries will develop implementation plans and protocols for “radiological protection requirements” and “cleanup of residual radioactive material and management of the resulting wastes and residues and release of property”.

Relevant Decisions

The relevant decisions addressed in this Order are those pertaining to radiological monitoring for adherence, as closely as possible, to dose limits identified for the public and the environment. The primary decision is whether a facility is operating with its specified guidelines. One relevant question that is not apparently addressed with any amount of rigor and probably should be is an evaluation of the ALARA process. In Chapter 2, 2.,b. Evaluations, a cost-benefit analysis is mentioned as an activity that could be performed, however, the paragraph continues on to state that the parameters could be hard to define and quantify. Therefore, with the exception of “meeting requirements of the National Environmental Policy Act, qualitative analyses are acceptable, in most instances, for ALARA judgments, especially where potential doses are well below the dose limit.”

Decision Makers

The primary regulatory agencies are the NRC and EPA, particularly as requirements are outlined in 10 CFR Parts 60 and 72, and 40 CFR Parts 61,191, and 192. (Chapter 2, 1.,c.,(2)). This Order relates to Clean Air Act, Clean Water Act, CERCLA, RCRA and various other Federal, State and local requirements.

DRAFT 10 CFR PART 834
RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT; NO DATE

Purpose

Purpose of Order: “The requirements in this part govern activities conducted by, or for, the Department that could result in the release of radioactive material, the exposure of members of the public to ionizing radiation, or contamination of the environment with radionuclides from DOE activities.” (Subpart A---General Provisions, 834.1 Scope)

Intent with Respect to Environmental Protection

The spirit and intent of this Order is to provide an outline for the areas of concern regarding radiation, the public and the environment. Definitions are provided for the various components of this CFR. The primary focus of this particular draft regulation is on the human component as potential receptors of radionuclides and their by-products. Environmental receptors are considered mainly as pathways to human exposure.

- A definition of environment can be found in the explanation of environmental surveillance. In this definition, environment is: “air, water, soil, foodstuffs, biota, and other media from DOE sites and their environs...” (834.2 Definitions,(a)).
- Water systems, both surface and underground, and the organisms contained in these media are the ecological resources addressed in this draft, as well as human populations.
- Environmental protection or the assessment of environmental impacts is addressed through the Environmental Radiological Protection Program (ERPP) (834.5), the Environmental Monitoring Program (EMP) (834.7), the Ground Water Protection Management Program (GWMP) (834.215), and the ALARA process (834.2).
- Monitoring data is to be used for verifying compliance with Order(s) requirements.

Compliance Requirements

This CFR requires that at a minimum, an EERP, an EMP, an ALARA Program, and a Site Environment Report is developed and submitted annually.

- An EERP is for “DOE activities that routinely generate, handle, process, or dispose of radioactive materials” (834.5). Environmental monitoring of airborne emissions, liquid waste stream emissions, and effluent monitoring is contained within the scope of an EERP.
- The EMP, in the context of this CFR, is to “characterize releases of radioactive material from a DOE activity, estimate the dispersal pattern in the environs, characterize the pathways of exposure to members of the public and estimate the doses to individuals, to the population, and to the biota in the vicinity of the DOE activity” (834.7).
- The ALARA Program is to “control and manage releases of radioactive materials and radiation exposures of members of the public to radiation at levels as low as reasonably achievable” (834.104). A consideration within this program is the “environmental (positive and negative) impacts associated” (834.104, (c), (8)) with alternatives that may be developed within the scope of this program.
- The Site Environment Report documents “quantities of radioactive materials released during the year to the environment, the calculated annual dose to the maximally exposed members of the public and the calculated collective dose to members of the public from exposures to radiation sources regulated under this part, and releases of radon and its progeny and the resultant individual and collective doses from these radionuclides...” (834.404).

Relevant Decisions

The relevant questions to be addressed by this CFR is the monitoring and assessment of whether or not the public and the environment are being exposed to unacceptable doses of radioactive elements. This CFR also outlines specific dose limits to which the public will be exposed, as well as some of the pathways by which this exposure may occur for the purpose of determining, via environmental data collected for the Site Environment Report, if these exposures were within limits outlined in this CFR.

Decision Makers

Activities and decisions to be made in accordance with this Order are to be performed by “the Department”, appropriate authorities within the EPA, State and local agencies, and the facility operator is to evaluate and document discharges to sanitary sewers.

10 CFR 834 VS 5400.5
RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT

10 CFR 834:

- Purpose: to provide governing requirements for DOE activities that could result in radioactive material release, public exposure to radiation, and environmental contamination with radiation;
- Defines both environment and ecological resources;
- Identifies specific ranges for dose limits primarily to the public; it does include environment as a pathway for human exposure;
- Requirements:
 - Environmental Radiological Protection Program
 - Environmental Monitoring Program
 - ALARA Program
 - Site Environment Report
- These requirements are used to assess 1) if the public and/or the environment are being exposed to radiation and 2) if these exposures are within limits outlined via the ALARA program;
- There are mechanisms identified if environmental monitoring documents radiation levels to be greater than ALARA identified limits;
- Identifies other regulatory documents for further guidelines - e.g. 40 CFR 141, Safe Drinking Water Act, etc.

Overall, this is a very detailed document regarding radiation, the public and the environment. However, the environment is primarily regarded as a pathway for human exposure. There aren't many requirements addressing environmental contamination, mitigation, etc., just that environmental contamination shouldn't happen. Also, the roles and responsibilities are not clearly, nor in great detail, addressed. If there is any discussion of a CFR canceling a DOE Order, this CFR should supersede 5400.5 because they are very similar in their focus and mechanisms for addressing radiation exposure for the public and the environment, as well as identifying supplemental documentation for further details.

5400.5:

- Purpose: to implement radiation protection guidelines for public and the environment;
- This Order also identifies specific limits for public exposure limits to radiation and radiation buildup in the environment;
- Requirements: compliance demonstration and the outlining of dose limits for the public and the environment;
- Demonstration of Order compliance is through conclusions based on information collected by surveillance and monitoring programs-references 5400.1;
- Required reports stem from observed levels in the environment that are greater than identified limits, but refers to other documents (DOE 5400.1 and DOE 5484.1) for further details;
- As is evidenced by the above remarks, this document refers frequently to other documents for the fulfillment of compliance, as well as other guidance documentation.

This document is also very detailed regarding radiation and the public and the environment. 5400.5 does contain tables referring to the Derived Concentration Guides for various pathways. In 5400.5, the roles and responsibilities are elaborated upon and identified throughout DOE, as well as referring to delegation in 5400.1 and 5480.1B. As stated above, these two documents closely mirror each other in content and procedures.

DOE ORDER 5400.2A
ENVIRONMENTAL COMPLIANCE ISSUE COORDINATION ORDER; 1-31-89

Purpose

Stated Purpose “To establish the Department of Energy (DOE) requirements for coordination of significant environmental compliance issues to ensure timely development and consistent application of Departmental environmental policy and guidance.”

Intent with Respect to Environmental Protection

The spirit and intent of this Order is to coordinate and integrate activities and reporting requirements performed by all DOE elements and contractors for ensuring compliance with environmental protection statutes. This Order is primarily an identification of the reporting chain of command.

Responsibilities and authorities have been delegated to the Assistant Secretary for Environmental, Safety, and Health, Program Senior Officials, the General Counsel, Heads of Field Elements, and the Director, Naval Nuclear Propulsion Program, in addition to those described in DOE 5480.1B. The Responsibilities and Authorities section outlines the administrative mechanisms that are to be followed.

- Language contained in this document which pertain to environmental protection are addressed via the maintenance of an environmental protection program. This is stated as the responsibility of the Director.
- Within the context of this Order, there are stated provisions for utilizing environmental monitoring data contained in the outline of duties for various officials. Monitoring data is to be used for verifying compliance with Order(s) requirements.

Compliance Requirements

The minimal compliance requirements are to fulfill applicable environmental statutes, particularly as it pertains to developing and maintaining an environmental protection program at any given site. Another compliance activity outlined in this Order is the development of “information exchange and other mutually beneficial programs as appropriate [and] consistent with PL 98-525.”

Relevant Decisions

The relevant questions that appear to be addressed by this Order are the determination of a compliance issue as a “Significant Environmental Compliance Issue” and the “Coordination Process” needed for timely and consistent resolution of compliance issues.

- A Significant Environmental Compliance Issue is “one which is or has the potential of being precedent setting or controversial, and/or involves Headquarters notification, concurrence, or approval.”
- The Coordination Process is “the means by which significant environmental issues will be resolved or disseminated to ensure timely development and consistent application of Departmental environmental policy and guidance.”

Decision Makers

The determination of meeting compliance requirements falls upon the chain of command as outlined in the Responsibilities section. This delegation is as stated above: the Assistant Secretary for Environmental, Safety, and Health, Program Senior Officials, the General Counsel and Heads of Field Elements.

DOE ORDER 5480.23
NUCLEAR SAFETY ANALYSIS REPORTS; EFFECTIVE DATE 4-30-92

Purpose

The stated purpose of this Order is to establish requirements for contractors responsible for the design, construction, operation, decontamination, or decommissioning of nuclear facilities to develop safety analyses that establish and evaluate the adequacy of the safety bases of the facilities. The Nuclear Safety Analysis Report (SAR) required by this Order documents the results of the safety analysis.

This Order cancels:

- DOE 5480.5, Paragraphs 51, 7b(3), 7b(4), 7e(3), 8a, and 8h, SAFETY OF NUCLEAR FACILITIES, of 9-23-86.
- DOE 5480.6, Paragraphs 7b(3), 7e(3), and 8c, SAFETY OF DEPARTMENT OF ENERGY-OWNED REACTORS, of 9-23-86.
- DOE 5481.1B, SAFETY ANALYSIS AND REVIEW SYSTEMS (for nuclear facilities), of 9-23-86.

Intent With Respect To Environmental Protection

This Order defines a hazard as “a source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation).” This definition of hazard clearly identifies environmental damage as a basis for a hazard and differentiates between human safety and health consequences and environmental damage.

Risk is defined as “the quantitative or qualitative expression of possible loss that considers both the probability that a hazard will cause harm and the consequences of that event.”

The Order defines Safety Analysis as “a documented process: (1) to provide systematic identification of hazards within a given DOE operation; (2) to describe and analyze the adequacy of measures taken to eliminate, control, or mitigate identified hazards; and (3) to analyze and evaluate potential accidents and their associated risks.” The Order also states that “it is the policy of the Department that nuclear facilities and operations be analyzed to identify all hazards and potential accidents associated with the facility ...” Therefore, the Order appears to require a safety analysis to provide identification of hazards with the potential to cause environmental damage and to assess the environmental consequences, as distinct from human health and facility damage consequences. However, the Order does not specify what is meant by environment. Since the definition of risk includes the evaluation of the consequences of the harmful event, it might be inferred that environmental damage includes ecological damage since evaluating the consequences of accidental releases of potentially harmful contaminants to the air, water, or soil is not well defined without some evaluation of impacts to potential receptors. However, no specific mention is made of ecosystems or ecological receptors.

Attachment 1 provides interim guidance for implementation of the Order and the development of SARs. This attachment specifies the need to consider protection of the environment as distinct from health and safety in the following statements.

“This Order specifies the scope and content of SARs, which will define the safety basis, document the logic of its derivation, demonstrate that adherence to the safety basis will ensure that the nuclear safety rules and requirements of the Department are met, and justify the adequacy of the safety basis in protecting health and safety of the public and workers and the environment.”

The Commitments paragraph (4.d.(3)(a)) makes it quite clear that current practices of limiting commitments to TSRs that do not consider “risks to co-located workers, facility workers and the environment” may “fall short of the requirements in this Order.”

In the “Scope and Content of Safety Analysis Reports” paragraph (4.f.2(d)) it is noted that SARs must “justify the adequacy of the safety basis in protecting the health and safety of the public and workers and the environment.” Paragraph (4.f.2(d)(1)) expands this statement by noting “this refers to the analysis of normal releases, incidents, and accidents that may yield adverse consequences for the public or the work force or may contaminate or otherwise have an adverse impact on the environment.

The separation of public and worker health and safety concerns from environmental protection concerns is clearly stated in 4f(d)11i, “The accident analyses should demonstrate:

1. The adequate protection of health and safety for members of the public both on and off the DOE reservation at which the facility is located;
2. The health and safety of workers on the DOE reservation not involved in or responsible for the facility or its safety;
3. The adequate protection of the environment from accidental contamination by the facility; and
4. The adequate protection of facility workers, particularly as necessary to support their reliable function of safety-related activities as well as individual protection.

As shown above, the Order makes many references to protection of the environment and consideration of environmental effects in the safety analysis. In addition, Attachment 1 makes it clear that what is different about this Order is the consideration of accidents that pose risks to workers and/or the environment. However, this Order and its final guidance document, DOE Standard 3009, leave considerable confusion as to the ultimate role of non-human related hazards in safety analyses. For example Technical Safety Requirements (TSRs), the only legally enforceable components of a safety analysis, are defined as “the conditions, safe boundaries, and the management or administrative controls necessary to ensure the safe operation of a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials or from radiation exposure due to inadvertent criticality.” Note that environmental protection is not part of this definition. DOE Standard 3009 specifically excludes environmental protection as a basis for developing TSRs (see the discussion of DOE Standard 3009.)

In one description of what is to be included in the SARs (paragraph 8b Scope and Content of Safety Analysis Reports) the focus is on human health and safety concerns “the scope and content of Safety Analysis Reports are to include hazard analysis and classification of the facility and the principal health and safety criteria,” there is no mention of environmental criteria.

In the paragraph 8c(3), “Evaluation of Potential Releases,” the Order states that “the hazard analysis shall estimate the consequences of accidents in which the facility or process and/or materials in the inventory are assumed to interact, react, or be released in a manner to produce a threat or challenge to the health and safety of individuals on site and off site.” Again, environment is conspicuously missing from this description of a hazard analysis.

A clear statement of the priorities of the risks is given in Attachment 1 “One of the first considerations in setting priorities for FSAR upgrades is the magnitude of the facility hazard (i.e., the range of potential risk). Risks to the health and safety of the public are the most important risk factors, with additional consideration given to the risks of incremental environmental contamination and risks to the work force on the DOE reservation.”

In the Safety Analysis Report checklist paragraph [4f(3)(d)3e] the need to coordinate the SAR with previous environmental investigations is noted, “in addition, safety analyses should contain sufficient information to confirm that site-related assumptions made in prior environmental analyses or impact statements have been validated, or that they have fully identified the need to revise and update environmental statements for the facility.” For example the SAR hazards analysis must be consistent with previous hazards analyses done for a NEPA EA or EIS.

Compliance Requirements

A safety analysis report (SAR) is required to document the safety basis for the facility. The safety basis for the facility is the basis for the decision that the activities associated with the facility can be conducted safely.

Relevant Decisions

The ultimate decisions associated with this order are decisions about the adequacy of safety measures to ensure that the facility can be constructed, operated, maintained, shut down, and decommissioned safely and in compliance with applicable laws and regulations. This decision is documented in a formal approval of the SAR, the Safety Evaluation Report (SER). During the safety analysis process facility design, construction, operation, and maintenance decisions may be influenced by the safety analysis results.

Decision Makers

The DOE headquarters line organization (Program Secretarial Officer) may be responsible for the SAR approval or the authority may be delegated to the field operations office. The facility managers are responsible for preparing the SAR and there is usually internal review and approval at the facility level. The field operations office performs an extensive review of the SAR (often using contractors) as does the headquarters line organization and DP-31, the Office of Engineering, Operations, Security, and Transitions Support. Although either the headquarters or the operations line organization has the final approval authority, this organization usually draws on the other review organizations to support the decision process. Any exemptions requested for the SAR must be approved by The Office of Environment, Safety and Health. Comments on the SAR by the various reviewers are addressed by the facility managers. Before the SAR is approved, all comments must be resolved.

DOE-STD-3009-94
PREPARATION GUIDE FOR U.S. DEPARTMENT OF ENERGY NONREACTOR NUCLEAR
FACILITY SAFETY ANALYSIS REPORTS; JULY 1994

Purpose

This Order was prepared to be consistent with the DOE 5480.23 requirements and its safety guide (Attachment 1 of the Order). It describes a SAR preparation method for Hazard Category 2 and 3 facilities. The methodology provided by this Standard focuses on characterizing facility safety for an existing facility rather than providing an approach for new facilities in which conceptual design or construction activities are in progress. This guidance is to be used to the extent it is judged to be of benefit when preparing Preliminary Safety Analysis Reports (PSARs).

Intent With Respect To Environmental Protection

In this Standard a distinction is made between "safety-class structures, systems, and components," and "safety-significant structures, systems, and components," and the balance of facility structures, systems, and components (SSCs). Safety-class SSCs are related to public protection and are defined by comparison with numerical Evaluation Guidelines. Safety-significant SSCs are identified for major contributors to defense in depth and worker safety as determined by the hazard analysis. In this Standard safety SSCs (safety-class SSCs and safety significant SSCs) are defined in terms of public protection, worker safety, and defense in depth. The approach taken in this Standard is to address environmental protection indirectly, through public health and safety and defense-in-depth related safety SSCs.

Interestingly, this Standard adopts the definition of safety-class structures, systems and components given in DOE 5480.30, safety-class structures, systems, and components (safety-class SSCs) are defined as "systems, structures, or components including primary environmental monitors and portions of process systems, whose failure could adversely affect the environment, or safety and health of the public as identified by safety analyses." However, "for the purpose of implementing this Standard, the phrase *adversely affect* means Evaluation Guidelines are exceeded. Safety-class SSCs are systems, structures, or components whose preventive or mitigative function is necessary to keep hazardous material exposure to the public below the offsite Evaluation Guidelines." Thus environment, as separate from public health and safety, is removed from the definition.

Technical safety requirements (TSRs) are those "requirements that define the conditions, the safe boundaries, and the management or administrative controls necessary to ensure the safe operation of a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive or nonradioactive hazardous materials or from radiation exposures due to inadvertent criticality." TSRs are the only legally enforceable safety requirements and are developed only for safety SSCs. "Safety SSC designations are not required for issues solely related to environmental protection. In accordance with DOE 5480.22, TSR designations are not required for such issues either. TSR designation associated with prevention of uncontrolled release of hazardous materials would typically be assigned for defense-in-depth considerations" (Section 3.3.2.3.4)

In Section 3.3.2.3.4 this Standard requires the documentation of pathways for uncontrolled release of large amounts of hazardous materials to the environment in the hazard evaluation. It also requires the estimation of potential consequences associated with these releases. However, the goal of this analysis is to conclude "that no large release with the potential to cause significant environmental insult exists that an obvious and easily implemented design or operational change could minimize." It is noted that this subsection is not intended to present detailed discussion of cost-benefit issues associated with preventative or mitigative features related to environmental protection, "such analyses are not related to the SAR effort." "Further issues of environmental contamination are not direct safety issues." The Standard notes that "the numerical Evaluation guidelines and legal limits on normal operations (i.e., EPA regulations) inherently place an upper bound on potential environmental releases."

Although not explicitly state, the underlying assumption implied by this Standard is that (1) defining safety SSCs and developing TSRs based on public exposure limits, worker safety considerations, and defense in depth and (2) meeting EPA environmental regulations demonstrates adequate protection of the environment as required by DOE 5480.23.

This approach to environmental protection, while it may be entirely valid, contrasts with DOE 5480.23, which specifically states that current practices of limiting commitments to TSRs that do not consider "risks to co-located workers, facility workers and the environment" may "fall short of the requirements in this Order (4.d.(3)(a))." This

apparent inconsistency leads to some confusion as to how, or if, environmental risks should be addressed in safety analyses.

Compliance Requirements

See Analysis of DOE 5480.23

Relevant Decisions

See Analysis of DOE 5480.23

Decision Makers

See Analysis of DOE 5480.23

DOE ORDER 6430.1A
GENERAL DESIGN CRITERIA; 4-6-89

Purpose

This Order provides general design criteria for use in the acquisition of the Department's facilities and establishes responsibilities and authorities for the development and maintenance of these criteria.

Intent With Respect To Environmental Protection

In the policy and objectives statements for this Order it is noted that “the planning, design and construction of the Department's facilities will be performed in a manner that will satisfy all applicable Executive Orders, Federal laws, and regulations.” The Executive Orders and federal laws and regulations identified in this Order include all the major environmental regulations and orders listed in Table 1.

The Order also requires that “all Department facilities are to be designed and constructed to be reasonable and adequate for their intended purpose and consistent with health, safety, security, and environmental protection requirements.

Several of the definitions in the Order refer to protection of the environment as a distinct concern, to be considered along with and in addition to health and safety considerations.

Emergency planning zone. An area for which planning is done to ensure that prompt and effective actions can be taken to protect the environment and the health and safety of on-site personnel and the public in the event of a major emergency.

Safety class. Three levels that are assigned to items (components, systems, or structures) that must be designed to provide specific functions to protect operators, the public, or the environment.

Safety class item. Systems, components and structures, including portions of process systems, whose failure could adversely affect the environment or safety and health of the public. Determination of classification is based on analysis of the potential abnormal and accidental scenario consequences as presented in the SAR

In the safety analysis section the Order notes that “all DOE facilities shall be evaluated for potential risks to the operators, the public, and the environment.”

The Order does not define environment and never mentions ecosystems or ecological resources. There is some evidence that, at least in terms of major safety concerns, environmental hazards mean releases to air or water. This can be seen in the definition of operational design based accidents. The Order states that an operational design based accident is “any design basis accident caused by an internal event. Direct causes are usually poor design or procedures, operator errors, equipment failures, or inadequate technical development (unknowns) that lead to the accident. The major accident categories are explosion, fire, nuclear criticality, leaks to the atmosphere, and leaks to the aquatic environment.”

This document doesn't provide guidance as to how to determine if the environment is adequately protected or how to assess environmental risks. The assumption in this document appears to be that the many orders and regulations that must be considered in the design of a new facility will provide this necessary guidance and the necessary protection

Compliance Requirements

This order provides criteria for facility construction and maintenance but does not require the generation of reports or other compliance documents.

Relevant Decisions

The decisions associated with this Order have to do with the compliance of the facility with the criteria specified in the Order. This is not done through a formal decision-making process, but through oversight of facility planning and construction by headquarters and field organization personnel responsible these activities.

Decision Makers

There is an oversight and implementation role rather than a formal decision-making role associated with this Order. Specific responsibilities with respect to this Order are carried out by the Deputy Assistant Secretary for Administration through the Director of Project and Facilities Management. This oversight includes technical advice. The heads of headquarters and field organizations having responsibilities for construction, project planning, and design or facility acquisitions are responsible for ensuring that the criteria in this Order are applied throughout the planning and design of each construction project under his or her cognizance.

DOE ORDER 5480.1B
ENVIRONMENT, SAFETY, AND HEALTH PROGRAM FOR
DEPARTMENT OF ENERGY OPERATIONS; 9-23-86

Purpose

Stated Purpose: "To establish the Environment, Safety, and Health Program for Department of Energy (DOE) operations".

The policy intent, as it is further outlined in this Order, is to (among other things):

- "Assure the protection of the environment and the health and safety of the public." (7. Policy, a.)
- "Assure compliance with applicable statutory requirements affecting Federal facilities and operations and where possible, consistent with the Department's mission and supported by appropriate cost/benefit analysis, reduce identified environment, safety, and health risks, even though not mandated by specific requirements." (7. Policy, d.)
- "Assure that quality assurance is pursued (i.e. that research, development demonstration and production activities are performed in a controlled manner; that components, systems, and processes are designed, developed constructed, tested, operated, and maintained according to industry accepted engineering standards, quality practices and Technical Specifications/Operational Safety Requirements; and that resulting technology data are valid and retrievable).

Require line management to be responsible for effective Environment, Safety, and Health (ES&H) performance in their programs. Through overview, the Assistant Secretary for Environment, Safety, and Health (EH-1) is responsible to assure acceptable ES&H performance for the Secretary and for Program Senior Officials." (7. Policy, e.)

Intent with Respect to Environmental Protection

The spirit and intent of this Order is to outline mechanisms to ensure the protection of the environment and human health and safety. These issues are addressed in this document primarily via more administrative mechanisms with no technical procedures. Responsibilities and authorities have been delegated to the Under Secretary, Program Senior Officials, Assistant Secretary for Environment, Safety and Health, Heads of Field Organizations, the Director of Administration, and the Deputy Assistant Secretary for Naval Reactors. The administrative mechanisms outlined cut across all official levels and focus on performing various types of performance reviews to assess efficiency and to coordinate and document ES&H program requirement compliance.

- Within this Order, there is no definition specifically for environment.
- The identified components of the environment to be monitored are air, water and soil. In terms of these media, specific attention is to be given to pollution, limiting risks posed through these media, and protecting property from accidental loss or damage (see below-the ES&H Program). There are no descriptions of aspects of the various media that are to be monitored. (5. Definitions, d.)
- Language describing environmental protection and the evaluation of risks and impacts is contained in the guidelines for the environmental survey that is to be conducted and the implementation plan to be developed as a requirement for this particular Order. Specifically, the "environmental survey is a documented, multidisciplinary assessment (with sampling and analysis) of a facility to determine environmental conditions and to identify environmental problem areas of environmental risk requiring corrective action." (5. Definitions, e.) These activities are pending further development and interpretation.
- There are no specific requirements outlined for environmental protection.
- Within the context of this Order, there are stated provisions for utilizing environmental monitoring data contained in the outline of duties for various officials. However, there is no guidance regarding inclusion of ecological or environmental concerns. For example, responsibility for the Assistant Secretary for Environment, Safety and Health is to:

"(17) Provide an independent prioritization of ES&H corrective actions and upgrade projects to the PSO and the Assistant Secretary or Management and Administration (MA-1), for use in initiating and, ultimately, by the Under Secretary, in establishing the Department budget requested. This input would be based on a number of information sources including ES&H appraisals, environmental surveys, environmental audits, and Field Office Manager's and PSO's recommended budget requests." (8. Responsibilities and Authorities, c.,(17))

- In this Order, there are no clear-cut statements about environmental protection and its role in the decision-making process. The closest reference to this issue is deferment of these types of decisions to an official's judgment (see 4 below).

Compliance Requirements

In general, the compliance activities and reports outlined in this Order are an ES&H Program, an Implementation Plan and an Environmental Survey. These programs and activities are primarily utilized to assess the threat to human health and safety and secondarily, the impacts of DOE operations on the environment.

Relevant Decisions

Any activities of concern impacting the environment and/or the public are left to the discretion of an official's professional opinion. In this light, if the official(s) feel that there is a "clear and present danger" (8.c.(20)) or if they feel that operations "would result in an undue ES&H risk" (8.b.(10)), it is their decision to suspend operations until this risk can be alleviated and/or mitigated.

There are three main routes, by which the overall ES&H program is to be implemented and monitored, corresponding to the requirements outlined in this Order for environmental protection. These are: the general ES&H programs that are expected to identify areas of concern (the ES&H Program), a planning document (Implementation Plan) to outline how these areas of concern or activities will be addressed, and a mechanism (an Environmental Survey) by which data (environmental information) is collected to ensure that the(se) areas are not negatively impacted by any DOE facilities and/or activities.

- The ES&H Program "encompasses those DOE requirements, activities, and functions in the conduct of all DOE and DOE-controlled operations that are concerned with: controlling air, water, and soil pollution; limiting the risks to the well being of both operating personnel and the general public to acceptably low levels; and protecting property adequately against accidental loss and damage". Activities that address these concerns range from environmental protection, occupational safety and industrial hygiene to process and facilities safety, nuclear safety and radioactive and hazardous waste management. (5. Definitions, d.)
- The "Environmental Survey is a documented, multidisciplinary assessment (with sampling and analysis) of a facility to determine environmental conditions and to identify environmental problem areas of environmental risk requiring corrective action". (5. Definitions, e.)
- The "Implementation Plan is a concise description of the approach, resources, and time period planned for implementing Orders that require such plans on a site-side basis. The plan includes a description of the execution of environmental protection, safety, and health responsibilities and authorities by the field organization, and any proposed generic exemptions to parts of such DOE orders". (5. Definitions, j.)

Decision Makers

According to this document, the decision makers appear to be within the DOE structure. It is within this hierarchy that risk decisions related to DOE operations are made as to whether or not to suspend operations.

40 CFR Part 1500

PURPOSE, POLICY, AND MANDATE

Purpose

The stated purpose of Part 1500 is to implement section 102(2) of NEPA, by telling federal agencies what they must do to comply with the procedures and achieve the goals of the Act (NEPA). NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and actions taken. The information must be high quality providing accurate scientific analysis, expert agency comments, and public scrutiny in order to implement NEPA. NEPA documents must concentrate on the issues that are truly significant to the action in question rather than amassing needless detail. The ultimate goal of the NEPA process is to foster excellent action by helping public officials make decisions that are based on understanding the environmental consequences and take actions that protect, restore and enhance the environment.

Federal agencies shall to the fullest extent possible: Interpret and administer the policies, regulations and public laws in accordance with the policies set forth in the act; Implement procedures to make the NEPA process more useful to the public and decision-makers; Integrate the NEPA process in planning and review ; Use the NEPA process to identify and assess reasonable alternatives that will avoid or minimize adverse effects upon the quality of the human environment .

It is stated in this section that the regulations (1500-1508) apply to section 102(2) and “The provisions of the Act and those of these regulations must be read together as a whole in order to comply with the spirit and letter of the law.”

Intent With Respect To Environmental Protection

The intent of this order is to implement, integrate, coordinate and focus NEPA activities.

There is no specific definition of environment, however, the phrases “quality of the human environment” and “significant effect on the human environment” could be widely interpreted by readers with different backgrounds or agendas. Ecological resources are not specifically defined, but seem to include any aspect of the natural environment which may fall within the realm of an EIS.

Language specifically related to impacts includes the use of the terminology “quality of the human environment” and “significant effect on the human environment”. For example, section 1500.4 (p) includes the statement, “Agencies shall reduce paperwork by: Using categorical exclusions to define categories of actions which do not individually or collectively have a significant effect on the human environment.” The evaluation of cumulative (collectively) effects has been extremely contentious and is not a trivial matter for interpretation.

The requirements for environmental protection that stem from Part 1500 appear to be the implicit assumption that by incorporating the NEPA values and process to the extent possible, the environment shall be protected. The document emphasizes the use of effective scoping to identify and focus on significant problems, without further defining the process to assure a successful outcome.

Compliance Requirements

This is a programmatic level regulation that contains limited or no specific compliance requirements.

It is stated in section 1500.6 that, “ Each agency shall interpret the provisions of the Act as a supplement to its existing authority and as a mandate to view traditional policies and missions in the light of the Act’s national environmental objectives. Agencies shall review their policies, procedures, and regulations accordingly and revise them as necessary to insure full compliance with the purposes and provisions of the Act. The phrase “to the fullest extent possible” in Section 102 means that each agency of the Federal Government shall comply with that section unless existing law applicable to the agencies operations expressly prohibits or makes compliance impossible.

Relevant Decisions

No specific decisions are delineated. Decisions would be identified during the execution of a site-specific NEPA process.

Decision Makers

Decision-makers appear to be Federal, State and public officials, there is no mention of tribal or trustee coordination.

40 CFR PART 1501 NEPA AND AGENCY PLANNING

Purpose

The purpose of part 1501 includes identifying the needs of and integrating the NEPA process in early planning; emphasizing early cooperative consultation among agencies to eliminate adversarial comments after the fact; detail the scoping process for focusing problem definition; and developing a mechanism to limit EIS development time.

The order addresses (by section)

1501.2 - Early application of NEPA in a process to insure that planning and decisions reflect environmental values. *Rely on process to identify values which are/can not be identified.*

Utilization of a systematic interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment. *Relying on the process to insure the decision which will only be as good as the interdisciplinary team which is assembled.*

Identification of "environmental effects in adequate detail" so they can be compared to economic and technical analysis. *What is adequate detail?*

The Federal agency consults early with appropriate state and local agencies and Indian tribes and the public when its own involvement is reasonably foreseeable. *Appropriate and foreseeable?*

1501.3 - When to prepare an environmental assessment.

When necessary under the procedures adopted by individual agencies.

Agencies may prepare an environmental assessment on any action at any time in order to assist agency planning and decision making.

1501.4 - When to prepare an EIS

1501.5 - Lead agency definition

1501.6 - Cooperating agency

The purpose of this section is to emphasize agency cooperation early in the NEPA process.

1501.7 - Scoping

A significant component of this order is introduction of 'Scoping' to the process and define its use in environmental problem formulation and focusing. This is one of the most significant failures in present environmental programs, i.e., the inability to plan investigations on the problem-appropriate, or ecologically-significant scale.

1501.8 - Time limits

Intent With Respect To Environmental Protection

The intent of the regulation appears to be the continuing development of the "NEPA process". The order lacks detail or "how to" and relies on the process to achieve the results, which is dependent on problem definition as well as the personnel involved. "Environment" is not specifically defined and no further definition of ecological resources is made. No specific resources are targeted but the spirit of the regulation is broad.

"Environmental effects" or "environmental issues" are mentioned but only that they will become apparent as a result of executing the process. The requirement for environmental protection seems to be execution of the process.

Relevant ecological concerns will be included in the decision-making process by forming an interdisciplinary team. As previously stated it is process dependent.

Compliance Requirements

No minimum compliance requirements are identified, this is primarily a process outline.

Relevant Decisions

Part 1501 requires decision to be made concerning when to write an EA or EIS to comply with the intent of NEPA.

Decision Makers

The decision makers seem to be the lead Federal agency, with subordinate input from others(state, Indian tribes, public).

40 CFR PART 1502 ENVIRONMENTAL IMPACT STATEMENT

Purpose

The purpose of Part 1502 is to provide further definition of the components of an Environmental Impact Statement. The primary purpose of an environmental impact statement stated in Part 1502 is to serve as an action forcing device to insure (*execution of the document insures compliance*) that the policies and goals defined in the Act are infused into the ongoing programs of the Federal Government. It shall provide *full and fair* discussion of *significant environmental impacts* and shall inform decision-makers and the public of the *reasonable alternatives* which would avoid or minimize adverse impacts or enhance the quality of the human environment. It shall be used by Federal officials in conjunction with other relevant material to plan actions and make decisions.

This order is an expansion on 1500 with detailed information on the development of an EIS and includes such issues as statutory requirements, actions requiring an EIS, timing and page limits.

Significant sections include:

1502.6 - Interdisciplinary preparation

Environmental impact statements shall be developed using an inter-disciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts (*the process will guarantee a successful outcome*). The disciplines of the preparers shall be appropriate to the scope and issues identified in the scoping process.

1502.8 - Writing

EISs shall be written in plain language so that decision-makers and the public can readily understand them. Agencies should employ writers of clear prose or editors to write, review or edit statements ,...

1502.16 - Environmental consequences.

The discussion will include the environmental impacts of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, and the relationship between short-term uses of man's environment and the maintenance and enhancement of the long-term productivity, and any irretrievable commitments of resources which would be involved in the proposal should it be implemented.

1502.20 - Tiering

Agencies are encouraged to tier their EIS to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decisions at each level of environmental review.

Intent With Respect To Environmental Protection

The intent of the regulation is to provide further detail to the format and contents of an EIS.

No further definition of environment is found and no specific identification of ecological resources is made. No specific resources are targeted. Environmental impacts are discussed in section 1502.16 of the regulation, Environmental consequences. The section uses terminology such as, adverse environmental effects, maintenance and enhancement of long-term productivity, irreversible and irretrievable commitments of resources, direct effects, indirect effects and environmental effects of alternatives. No specific definition of this terminology is contained in the regulation, although direct and indirect effects are defined in section 1508.8. The requirements for environmental protection are assured through the incorporation of an interdisciplinary team to the process. The definition of environmental effect would not necessarily be obvious to a lay person.

Compliance Requirements

No minimum compliance requirements are stated. The regulation provides guidance on recommended EIS format and content.

Relevant Decisions

The decision made by preparing an EIS is whether, and if so what, significant environmental impact will be associated with the proposed and alternative courses of action. The decision of whether to go forward with the proposed action is informed by the EIS, however, the EIS itself does not consider that decision.

Decision Makers

The decision-makers appear to primarily be Federal agencies, with subordinate input from others. The statement “decision-makers and the public” is used implying the public is not a decision-maker.

40 CFR 1503 COMMENTING

Purpose

The purpose of the regulation is to support the NEPA process by further defining the NEPA document comment process.

Significant sections include:

1503.2 - Duty to comment

This section specifies that federal agencies with jurisdiction by law or special expertise, “shall comment on statements within their jurisdiction, expertise, or authority. Agencies shall comment within the time period specified for comment in 1506.10.

1503.3 - Specificity of comments

Comments shall be as specific as possible and may address the adequacy of the statement or the merits of the alternatives discussed or both.

When a commenting agency criticizes a lead agencies predictive methodology, the commenting agency should describe the alternative methodology it prefers and why.

Intent With Respect To Environmental Protection

The intent of the regulation is to expand on the needs and requirements of the NEPA document review/comment process and does not have specific environmental protection implications outside of its administrative functions. One general comment in section 1503.3, Specificity of comments, states that, “When a commenting agency criticizes a lead agency’s predictive methodology, the commenting agency should describe the alternative methodology which it prefers and why”. Strict application of this requirement would facilitate comment resolution and document finalization.

Compliance Requirements

This regulation provides general guidance for the process and therefore does not contain strict compliance requirements or criteria.

Relevant Decisions

Does not apply, this regulation provides general guidance for the process.

Decision Makers

Federal and cooperating agencies.

**ANALYSIS OF 40 CFR 1504
PREDECISION REFERRALS TO THE COUNCIL OF PROPOSED FEDERAL ACTIONS
DETERMINED TO BE ENVIRONMENTALLY UNSATISFACTORY**

Purpose

This part establishes procedures for referring to the Council Federal interagency disagreements concerning proposed major Federal actions that might cause unsatisfactory environmental effects.

This part describes a procedural and administrative process that does not substantively relate to the task at hand. No further review will be provided at this time.

40 CFR 1505
NEPA AND AGENCY DECISION MAKING

Purpose

The purpose of this part is to order the affected agencies to adopt procedures to ensure that decisions are made in accordance with the policies and purposes of the Act (NEPA).

Significant sections include:

1505.1 - Agency decision-making procedures

Procedures shall include:

- (a) Implementing procedures under section 102(2) to achieve the requirements of sections 101 and 102(1);
- (b) Designating the major decision points for the agencies principle programs likely to have a significant *effect on the human environment* and assuring that the NEPA process corresponds with them.;
- (d) Requiring that the relevant environmental documents, comments, and responses accompany the proposal through existing agency review processes so that agency officials use the statement in making decisions.;
- (e) and in relation to alternatives. If another decision document accompanies the relevant environmental documents to the decision-maker, agencies are *encouraged* to make available to the *public* before the decision is made any part of the document that relates to the comparison of alternatives.

1505.2 - Record of decision

Shall: State whether all practicable means to avoid or minimize *environmental harm* from the alternative selected have been adopted and if not why not. A *monitoring* and enforcement program shall be adopted and summarized *where applicable for any mitigation..*

1505.3 - Implementing the decision

Agencies *may* provide monitoring to assure that their decisions are carried out and *should* do so in *important areas*.

The lead agency shall: (b) condition funding of actions on mitigation; and (d) *Upon request*, make available to the public the results of relevant monitoring.

Intent With Respect To Environmental Protection

The intent of the regulation is to provide additional guidance on the NEPA decision-making process. The regulation is largely administrative and seems to expect the execution of “the process” to lead to the proper decision.

“Environment” is not defined but reference is made to “the human environment” and could be variously interpreted. No specific resources are identified or targeted, however reference is made to “important cases”, which are not defined. Language is contained in the regulation referring to mitigation and monitoring programs, but no specific detail is provided.

The regulation seems to rely on the process to recognize and address all concerns.

Compliance Requirements

No specific requirements, although the statement is made to, “condition funding of actions on mitigation”. Minimum compliance would appear to be development of implementing procedures specified in 1505.1 (a) and designating the major decision points for agency programs as specified in 1505.1 (b). The Record of Decision is would be the ultimate compliance requirement.

Relevant Decisions

The Record of Decision, if required in the case of an EIS, shall: state the decision; identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which are considered to be environmentally preferable; and state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted.

Decision Makers

The decision-makers appear to be government agencies first and the public second.

40 CFR 1506
OTHER REQUIREMENTS OF NEPA

Purpose

This regulation is administrative and procedural and is not necessarily relevant to the project at hand. Significant issues addressed in this regulation include; limitations of actions during the NEPA process, elimination of duplication with state and local procedures, combining documents, and public involvement.

Intent With Respect To Environmental Protection

The spirit and intent seems to be to encourage efficiency and cooperation while minimizing redundancy in programs and document development.

No other specific issues related to this project were discussed.

40 CFR 1507
AGENCY COMPLIANCE

Purpose

The purpose of the regulation is to specify that, “All agencies of the Federal Government shall comply with these regulations. It is the intent of these regulations to allow each agency flexibility in adapting its implementing procedures authorized by 1507.3 to the requirements of other applicable laws.”.

Intent With Respect To Environmental Protection

The intent of this regulation, with respect to environmental protection, appears to be to repeat or restate previous general guidance in an abbreviated form and establishing a deadline for implementation.

No other specific issues related to this project were discussed.

40 CFR PART 1021

Purpose

The purpose of this part is to establish procedures that the Department of Energy (DOE) shall use to comply with section 102(2) of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4332(2)) and the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR parts 1500-1508). This part supplements, and is to be used in conjunction with, the CEQ Regulations.

It is DOE's policy to follow the letter and spirit of NEPA; comply fully with the CEQ Regulations; and apply the NEPA review process early in the planning stages for DOE proposals.

Intent With Respect To Environmental Protection

This regulation is largely procedural and administrative in nature and is very consistent in its level of technical detail and definition as the source regulations or orders it supports. The regulation is organized as follows:

PART 1021--NATIONAL ENVIRONMENTAL POLICY ACT IMPLEMENTING PROCEDURES

Subpart A--General

- 1021.100 Purpose.
- 1021.101 Policy.
- 1021.102 Applicability.
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Subpart D--Typical Classes of Actions

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Appendix A to Subpart D--Categorical Exclusions Applicable to General Agency Actions

Appendix B to Subpart D--Categorical Exclusions Applicable to Specific Agency Actions

Appendix C to Subpart D--Classes of Actions that Normally Require EAs but not Necessarily EISs

Appendix D to Subpart D--Classes of Actions that Normally Require EISs

The intent of part 1021 appears to be to define and specify how to implement and control the NEPA process. The implicit assumption is that environmental protection will be accomplished through the execution of the NEPA process. This approach has been found to fail in the related CERCLA/RCRA programs, where proper, effective, “problem definition” or “scoping” has not occurred and therefore relevant environmental issues of concern have not been adequately identified or assessed.

This problem may be demonstrated by the language used in section 1021.200 - DOE Decision making, which follows:

(a) For each DOE proposal, DOE shall coordinate its NEPA review with its decision making. Sections 1021.211 through 1021.214 of this part specify how DOE will coordinate its NEPA review with decision points for certain types of proposals (40 CFR 1505.1(b)).

(b) DOE shall complete its NEPA review for each DOE proposal before making a decision on the proposal (e.g., normally in advance of, and for use in reaching, a decision to proceed with detailed design), except as provided in 40 CFR 1506.1 and Secs. 1021.211 and 1021.216 of this part.

(c) During the decision-making process for each DOE proposal, DOE shall consider the relevant NEPA documents, public and agency comments (if any) on those documents, and DOE responses to those comments, as part of its consideration of the proposal (40 CFR 1505.1(d)) and shall include such documents, comments, and responses as part of the administrative record (40 CFR 1505.1(c)).

(d) If an EIS or EA is prepared for a DOE proposal, DOE shall consider the alternatives analyzed in that EIS or EA before rendering a decision on that proposal; the decision on the proposal shall be within the range of alternatives analyzed in the EA or EIS (40 CFR 1505.1(e)).

(e) When DOE uses a broad decision (such as one on a policy or program) as a basis for a subsequent narrower decision (such as one on a project or other site-specific proposal), DOE may use tiering (40 CFR 1502.20) and incorporation of material by reference (40 CFR 1502.21) in the NEPA review for the subsequent narrower proposal.

as well as the language in section 1021.215 - Applicant process, which states:

(a) This section applies to actions that involve application to DOE for a permit, license, exemption or allocation, or other similar actions, unless the action is categorically excluded from preparation of an EA or EIS under subpart D of this part.

(b) The applicant shall:

- (1) Consult with DOE as early as possible in the planning process to obtain guidance with respect to the *appropriate level and scope* of any studies or environmental information that DOE may require to be submitted as part of, or in support of, the application;
- (2) Conduct studies that DOE *deems necessary and appropriate* to determine the environmental impacts of the proposed action;
- (3) Consult with appropriate Federal, state, regional and local agencies, American Indian tribes and other potentially interested parties during the preliminary planning stages of the proposed action to identify environmental factors and permitting requirements;
- (4) Notify DOE as early as possible of other Federal, state, regional, local or American Indian tribal actions required for project completion to allow DOE to coordinate the Federal environmental review, and fulfill the requirements of 40 CFR 1506.2 regarding elimination of duplication with state and local procedures, as appropriate;
- (5) Notify DOE of private entities and organizations interested in the proposed undertaking, in order that DOE can consult, as appropriate, with these parties in accordance with 40 CFR 1501.2(d)(2); and
- (6) Notify DOE if, before DOE completes the environmental review, the applicant plans to take an action that is within DOE's jurisdiction that may have an adverse environmental impact or limit the choice of alternatives. If DOE determines that the action would have an adverse environmental impact or would limit the choice of reasonable alternatives under 40 CFR 1506.1(a), DOE will promptly notify the applicant that DOE will take appropriate action to ensure that the objectives and procedures of NEPA are achieved in accordance with 40 CFR 1506.1(b).

It is a widely recognized that DOE has failed to implement studies or acquire environmental information at the *appropriate level and scope*. DOE continues to conduct studies that it *deems necessary and appropriate* to determine the environmental impacts, however these studies fail to support a comprehensive conceptual model or agreed to decision framework.

NEPA itself is an adequate procedural model which has been poorly implemented at the field level. This is probably due to inadequate funding to maintain data on areas potentially impacted by DOE projects, and in part due to the need to rapidly assess impacts once a project has been identified making collection of additional data impossible.

Compliance Requirements

It is the stated purpose by this regulation, "to establish procedures that the Department of Energy (DOE) shall use to *comply* with section 102(2) of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4332(2)) and the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR parts 1500-1508)." Specific responsibilities for compliance are limited although process timetables or schedules are stated, in general the entire regulation is a broadly written compliance requirement which is widely open for interpretation and therefore may be difficult to evaluate for the adequacy of compliance.

Relevant Decisions

The decisions required of this regulation are largely planning in nature and include: when to start the NEPA process, with the requirement for adequate time and funding; the determination of the level of effort required, which would consider the evaluation of adopting an existing NEPA document if appropriate and is summarized in the following:

- (a) DOE shall determine, under the procedures in the CEQ Regulations and this part, whether any DOE proposal:
 - (1) Requires preparation of an EIS;
 - (2) Requires preparation of an EA; or

- (3) Is categorically excluded from preparation of either an EIS or an EA. DOE shall prepare any pertinent documents as required by NEPA, the CEQ Regulations, or this part.
- (b) Notwithstanding any other provision of these regulations, DOE may prepare a NEPA document for any DOE action at any time in order to further the purposes of NEPA. This may be done to analyze the consequences of ongoing activities, support DOE planning, assess the need for mitigation, fully disclose the potential environmental consequences of DOE actions, or for any other reason. Documents prepared under this paragraph shall be prepared in the same manner as DOE documents prepared under paragraph (a) of this section.

In addition, it is explicitly stated in section 1021.210 that:

- (a) For each DOE proposal, DOE shall coordinate its NEPA review with its decision making. Sections 1021.211 through 1021.214 of this part specify how DOE will coordinate its NEPA review with decision points for certain types of proposals (40 CFR 1505.1(b)).
- (b) DOE shall complete its NEPA review for each DOE proposal before making a decision on the proposal (e.g., normally in advance of, and for use in reaching, a decision to proceed with detailed design), except as provided in 40 CFR 1506.1 and Secs. 1021.211 and 1021.216 of this part.
- (c) During the decision-making process for each DOE proposal, DOE shall consider the relevant NEPA documents, public and agency comments (if any) on those documents, and DOE responses to those comments, as part of its consideration of the proposal (40 CFR 1505.1(d)) and shall include such documents, comments, and responses as part of the administrative record (40 CFR 1505.1(c)).
- (d) If an EIS or EA is prepared for a DOE proposal, DOE shall consider the alternatives analyzed in that EIS or EA before rendering a decision on that proposal; the decision on the proposal shall be within the range of alternatives analyzed in the EA or EIS (40 CFR 1505.1(e)).
- (e) When DOE uses a broad decision (such as one on a policy or program) as a basis for a subsequent narrower decision (such as one on a project or other site-specific proposal), DOE may use tiering (40 CFR 1502.20) and incorporation of material by reference (40 CFR 1502.21) in the NEPA review for the subsequent narrower proposal.

Decision Makers

The Secretary of Energy. The Assistant Secretary for Environment, Safety and Health, or his/her designee, is responsible for overall review of DOE NEPA compliance. Federal, state, regional and local agencies, American Indian tribes and other potentially interested parties all have identified roles in NEPA.

DOE ORDER 5440.1E
NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE PROGRAM (11-10-92) WITH RESPECT
TO ECOLOGICAL IMPACT ASSESSMENT PROJECT

Purpose

To establish Department of Energy (DOE) responsibilities and procedures to implement the National Environmental Policy Act of 1969 (NEPA).

The Order further states DOE's Policy that, "NEPA establishes a national policy to ensure that consideration is given to environmental values and factors in Federal planning and decision making. The Department of Energy's policy is to comply fully with the letter and spirit of NEPA. To ensure that environmental factors are considered in the decision-making process and to promote environmentally responsible decisions, DOE will incorporate NEPA requirements early in the planning process for proposed actions. DOE will also coordinate its NEPA activities with the states and tribes that host DOE actions. The Department is committed to complete assessment and full disclosure of the environmental consequences of its proposed actions."

This order cancels:

- DOE 5440.1D, National Environmental Policy Act Compliance Program, of 2-22-91.

Intent With Respect To Environmental Protection

The intent of the order is fairly focused on assigning the Responsibilities and Authorities for implementation of NEPA to the various levels of DOE management including: Secretarial Officers, Field Officers, NEPA Compliance Officers, Assistant Secretary for Environment, Safety and Health, Director of NEPA Oversight, General Counsel, Director of Procurement, Assistance and Program Management, Director of Naval Nuclear Propulsion Program, and the Secretary.

- "Environment" is not defined in the body of the order. The order adopts the definitions in the CEQ Regulations (40 CFR Part 1508) and DOE NEPA Regulations (10 CFR 1021.103).
- A very broad definition of "resources" can be inferred from the limited technical definitions contained in the order, i.e., Environmental Impact Statement (EIS) Implementation Plan (IP), Mitigation Action Plan, Programmatic NEPA Document, Site-wide NEPA Document, Supplemental Analysis, Supplemental EIS.
- No specific ecological resources are targeted by the order.
- Requirements for environmental protection appear to be contained elsewhere, possibly in CEQ Regulations and DOE NEPA Regulations (10 CFR 1021).
- General guidance to include environmental and/or ecological concerns in the decision-making process is provided, but no specific guidance on how to do this is provided.
- The order does not specifically address technical concerns or methods for including environmental concerns in the decision-making process. It is primarily a management tool assigning administrative responsibilities.

The intent or scope of the order may be demonstrated by the Secretarial responsibilities which are "the consideration of environmental factors in decision making and the timely preparation of documents required by this order". This is accomplished by the execution of supporting requirements, primarily 40 CFR 1500-1508 and 10 CFR 1021. Technical support is guaranteed by general statements such as, "Ensure that the program office and each DOE Field Office under its authority augment, as appropriate, and maintain its environmental compliance staff so that a sufficient variety of environmental disciplines is represented to ensure that properly supervised and technically accurate and complete NEPA documents are prepared."

Compliance Requirements

The order administratively identifies parties responsible for NEPA compliance by the general identification of document development and schedule requirements. No specific monitoring activities are identified. Compliance is accomplished by generating specified documents within the required schedule.

Further potential compliance criteria for this broad management order are listed by responsible party. Examples contained in the order include:

The Secretary shall, "Ensure that NEPA milestones (categorical exclusions (CX); EA, FONSI, or NOI, draft EIS, final EIS, ROD) have been incorporated into project planning documents, including those

prepared under the project management system administered by the Office of Procurement, Assistance and Program Management (PR) through DOE 4700.1. Ensure that a NEPA Status Report on existing or planned NEPA compliance activities is included in internal budget review documents prepared pursuant to DOE 5100.3.

“Designate a NEPA Compliance Officer for the Program Office and maintain this position to ensure that the requisite functions are carried out; inform the Office of NEPA Oversight (EH-25) of the designation.”

Field Officers shall: “Designate a NEPA Compliance Officer for the field organization and maintain this position to ensure that the requisite functions are carried out; inform the Office of NEPA Oversight (EH-25) of the designation.”

The Assistant Secretary of Environment, Safety and Health shall: “Monitor project planning documents, within the project management system administered by PR through DOE 4700.1, to ensure that project schedules include NEPA milestones.”

“Review NEPA Status Reports included in DOE internal budget review documents to ensure that projects include appropriate NEPA compliance planning.”

“Conduct periodic NEPA compliance audits of DOE facilities and programs.”

These requirements are process compliance oriented and the limited mention of technical issues are vague and open to interpretation as to “sufficient variety” of technical staff is “represented” to ensure accuracy and completeness of prepared documents.

Relevant Decisions

The decision being addressed is the determination of whether or not a proposed DOE action is expected to have an environmental impact, as defined and documented through the implementation of supporting regulations (ex, NEPA) or Orders.

Decision Makers

The decision-makers for execution of the order include the management levels identified above. The decision-makers for the process to which this order assigns responsibility include these same management levels as well as the host state, host tribal entities, and the public.

DOE ORDER 451.1
NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE PROGRAM

Purpose

The stated purpose of this order is to establish DOE internal requirements and responsibilities for implementing the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality Regulations Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and the DOE NEPA Implementing Procedures (10 CFR Part 1021).

This order cancels:

- DOE 5440.1E, NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE PROGRAM, of November 10, 1992.

Intent With Respect To Environmental Protection

The intent of this order is to establish the requirements and responsibilities necessary to ensure efficient and effective implementation of DOE's NEPA responsibilities through teamwork. A key responsibility for all participants is to control the cost and time for the NEPA process while maintaining its quality.

The order identifies and assigns responsibilities for implementation of the order to the Secretarial Officer, Heads of Field Offices, NEPA Compliance Officers, NEPA Document Officers, and the Assistant Secretary for Environment, Safety and Health. The order is largely administrative and does not specifically identify ecological resources or address technical implementation requirements. The order does clearly state that, "the legal obligation to comply with NEPA belongs to DOE".

Significant processes the order mentions include; scoping, public participation, three year reviews of SWEIS to ensure adequacy relating to NEPA compliance, and the incorporation of NEPA values, such as analysis of *cumulative, off-site, ecological*, and socioeconomic impacts, to the extent practicable, in DOE documents prepared under the Comprehensive Environmental Response, Compensation, and Liability Act.

Compliance Requirements

There are very few direct, auditable compliance requirements contained in the order, it is primarily a vehicle for delegating responsibilities to individuals. It is stated in the order that in addition to the requirements of NEPA and the associated regulations the program shall include:

- A system of DOE NEPA Compliance Officers.
- Internal scoping procedures for environmental assessments and environmental impact statements that include development of a schedule. For an environmental impact statement, the schedule, absent extraordinary circumstances, will provide for completion of a final environmental impact statement within 15 months of the issuance of the Notice of Intent.
- NEPA quality assurance plans and public participation plans.
- Annual NEPA planning summaries. In addition, every three years starting with 1995, the annual NEPA planning summary for each Field Organization will include an evaluation of whether a site-wide environmental impact statement would facilitate future NEPA compliance efforts.
- A DOE NEPA Document Manager for each environmental impact statement and environmental assessment.
- A system for reporting lessons learned and encouraging continuous improvement.
- Tracking and annually reporting progress in implementing a commitment for environmental impact mitigation that is essential to render the impacts of a proposed action not significant, or that is made in a record of decision.

Relevant Decisions

The relevant decisions related to this order are the effective implementation of NEPA. The order is fairly broadly written but it is obvious that the relevant decisions relate to the efficient, timely, technically responsible, and cost effective application of NEPA. This is to be accomplished through the disciplined application of the process. Some representative decisions or responsibilities identified (per responsible party) include:

- Determine that an environmental assessment is appropriate or that an environmental impact statement is appropriate or required.
- Obtaining concurrence of DOE counsel in the legal adequacy of an environmental assessment before it is approved and in any finding of no significant impact before it is issued.

- Determining, based on an environmental assessment, that the impacts of a proposed action are significant and that an environmental impact statement is required, or issuing a finding of no significant impact when appropriate.
- Determine that a proposed action that may be an interim action is clearly allowable under the Regulations. For a proposed action that may be an interim action not clearly allowable under the Regulations, provide the Assistant Secretary for Environment, Safety and Health with a recommendation for a determination whether the proposed action may proceed.
- For actions specifically listed in Appendix A or B to Subpart D of the DOE Regulations, make categorical exclusion determinations and approve and issue any required associated floodplain and wetlands documents. Categorical exclusion determinations need not be documented.
- Evaluate proposed and alternative actions, including alternative mitigation measures, and make any appropriate recommendations to mitigate environmental impacts.
- Concur in the environmental content of a record of decision.
- For a proposed action that may be an interim action not clearly allowable under the Regulations, determine whether the proposed action may proceed.
- When a required NEPA document is not being prepared, direct a Secretarial Officer or Head of a Field Organization to prepare an environmental assessment or environmental impact statement
- Advise the responsible Secretarial Officer and, if appropriate, the Secretary, of a proposed action believed not to conform with DOE policies or, after consulting with the Assistant General Counsel for Environment, applicable environmental laws and regulations.

Decision Makers

Decision makers identified in this order include; the Secretary, NEPA Compliance Officers, NEPA Document Managers, the Assistant Secretary for Environment, Safety and Health, the Director, Office of NEPA Policy and Assistance and the Assistant General Counsel for Environment

THE DRAFT LAND AND FACILITY USE MANAGEMENT DOCUMENT (DRAFT DOE ORDER 4310)

Although this order was never adopted it is described here as it reflects an important new emphasis on incorporating ecological concerns in DOE planning. Order 430.1, Life-Cycle Asset Management, which does provide the land use management guidance, although not as explicit as 4310 does incorporate the principles of 4310. Order 430.1 calls for DOE to manage its lands as “valued national resources” and to develop comprehensive land use management plans and to involve the relevant stakeholders in the planning process.

Purpose

The objective of this draft document is to state Department of Energy policy which is “to manage all of its land and facilities as valuable national resources. Our (DOE) stewardship will be guided by land and facility use decisions based on integrating mission, ecological, economic, cultural, and social factors while considering the site's larger regional context and Stakeholder participation. This order will result in land and facility uses that support the Department's critical missions, stimulate the economy, and protect the environment.”

CANCELLATION AND IMPLEMENTATION. The comprehensive planning process established by this Order is effective on the date of approval. DOE 4320.1B, SITE DEVELOPMENT PLANNING, of 3-26-92, is hereby canceled.

Intent With Respect To Environmental Protection

The document also defines the organizational structure for and principles of a “Comprehensive Planning Process” which is, “The planning process associated with managing DOE’s land and facilities in a holistic manner that integrates mission, ecological, economic, cultural and social factors in their regional context.”. This document outlines an organization and planning structure that could have broad powers and programmatic integration capabilities to influence (or supersede) many aspects of current environmental assessment, management, monitoring and development activities across the DOE complex. It is fairly broadly written but, through the language and definitions provided, seems to have the intent of making a major organizational change through the empowerment of the Comprehensive Planning Analysis Group. This group is defined as, “The crosscutting organization chartered by this Order to adaptively manage the Departments comprehensive planning process.” This is particularly interesting in light of the definition of Adaptive Management as:

Implementing management decisions in an ongoing process that requires monitoring and evaluation. It applies scientific principles and methods to adapt resource management activities incrementally based on monitoring and evaluation, new scientific findings, and social changes and demands.

This implies an integrated, iterative, science based management structure within a comprehensive program-goal driven environment. This would require integration, communication, and a single clearly define conceptual model around which to structure decisions. It is clearly stated that it is the intent of DOE (and the requirement of the M&O Contractor as defined in Attachment 1) to “Manage site(s) as a single Departmental asset”.

The execution of this mandate is broadly captured in the definition of Ecosystem Management which is:

The integration of ecological principles and economic and social factors to manage ecosystems to safeguard ecological sustainability, biodiversity, and productivity. It is a proactive, goal-driven approach to sustaining ecosystems and their values. It needs a cooperatively defined vision of desired future ecosystem conditions that integrate ecological, economic, and social factors affecting a management unit defined by ecological, not political, boundaries.

The necessity for coordinated efforts is apparent by statements that recognize the need of, “Building upon existing data and the need for additional information, the Comprehensive Planning Process will evaluate of the condition of site's external and internal ecological, economic, social, and cultural factors within their regional context.” As well as the recognition that implementation of the Comprehensive Plan requires the following:

- (1) Full and complete coordination between the Comprehensive Planning process, the site's strategic planning, Headquarters Program's strategic planning, and budget processes.

- (2) Integration of other Headquarters and Field Element practices that support, or are associated with, land and facility use and planning decisions into the Comprehensive Planning process
- (3) Commitment of all levels of the Department.

Compliance Requirements

There are no explicit compliance requirements in this organizational and management document, however the requirements delineated in the order characterize the needs of a Comprehensive Planning Process which include:

- (1) Building upon existing data and the need for additional information, the Comprehensive Planning Process will evaluate of the condition of site's external and internal ecological, economic, social, and cultural factors within their regional context.
- (2) Development and analysis of site's internal land and facility use options which support mission requirements or other appropriate uses and are based on the following: Stakeholder future use preferences, asset management process inputs, ecosystem sustainability goals, economic sustainability goals, National Environmental Policy Act reviews, and other site information.
- (3) Coordination of future land and facility use option(s): with existing and planned activities, which may include National Environmental Policy Act activities, Community Reuse Organization initiatives, existing and future treaty rights, interagency and intergovernmental actions, legal and regulatory requirements, and other activities that may affect the comprehensive plan.
- (4) Selection of land and facility use option(s) through a systematic process.
- (5) Preparation of a Comprehensive Plan that documents the results of the process and provides directions to achieve the selected future option(s).

Relevant Decisions

Specific decisions or decision points are not identified. However, a number of important questions/decisions will have to be made to implement this order including:

- What should be the long-term ecological management objectives?
- What criteria can be used to determine whether objectives are being met?
- Whether to approve a site's Comprehensive Plan.
- Whether additional management activities are needed to achieve the global objectives established in the Comprehensive Plan.

Decision Makers

Associate Deputy Secretary for Field Management.

Cognizant Secretarial Officers.

Operations Office Managers and Heads of Applicable Field Elements.

Comprehensive Planning Analysis Group.

Stakeholders (as defined in Attachment 2)

Management and operating contractors

Definitions

ADAPTIVE MANAGEMENT. Implementing management decisions in an ongoing process that requires monitoring and evaluation. It applies scientific principles and methods to adapt resource management activities incrementally based on monitoring and evaluation, new scientific findings, and social changes and demands.

COMPREHENSIVE PLAN. -New or existing document or series of documents for shaping future site development based on the shared long-term goals and objectives of the Department, site, and stakeholders.

COMPREHENSIVE PLANNING PROCESS. The planning process associated with managing DOE's land and facilities in a holistic manner that integrates mission, ecological, economic, cultural and social factors in their regional context.

ECOLOGICAL FACTOR. Those items related to the idea of an association among all organisms, including humans, and their environments across time and space. These include, but are not limited to, the capabilities, stability, condition, function, diversity, resiliency, and sustainability of natural communities and physical features

ECOSYSTEM. A dynamic community of biological organisms, including humans and the physical environment with which they react. This unit is a given area where a flow of energy leads to clearly defined trophic structure, biotic diversity, and material cycles.

ECOSYSTEM MANAGEMENT. The integration of ecological principles and economic and social factors to manage ecosystems to safeguard ecological sustainability, biodiversity, and productivity. It is a proactive, goal-driven approach to sustaining ecosystems and their values. It needs a cooperatively defined vision of desired future ecosystem conditions that integrate ecological, economic, and social factors affecting a management unit defined by ecological, not political, boundaries.

ECOSYSTEM SUSTAINABILITY. The ability of an ecosystem to maintain the integrity of ecological processes and functions, biological diversity, and productivity over time. Related to ecological stability (balance of nature) and indefinite renewability.

ECOSYSTEM SUSTAINABILITY GOALS. The statement of desired objectives or conditions in the ecosystem related to its ability to sustain over time: diversity, uses, aesthetics, natural balances, carrying capacities, and material cycles.

NATIONAL ENVIRONMENTAL POLICY ACT REVIEWS. Information from Findings of No Significant Impact, Environmental Assessments, and Environmental Impact Statements, and options developed under 10 CFR 1021, National Environmental Protection Act Implementing Procedures.

STAKEHOLDER. Those individuals and groups in the public and private sectors who are interested in and/or affected by the Department's activities and decisions.

ENDANGERED SPECIES ACT

Purpose

The stated purpose of this Act is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.

It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this chapter. It is further declared to be the policy of Congress that Federal agencies shall cooperate with State and local agencies resolve water resource issues in concert with conservation of endangered species.”

This regulation is organized in sections as follows:

- Sec. 1531. Congressional findings and declaration of purposes and policy
- Sec. 1532. Definitions
- Sec. 1533. Determination of endangered species and threatened species
- Sec. 1534. Land acquisition
- Sec. 1535. Cooperation with States
- Sec. 1536. Interagency cooperation
- Sec. 1537. International Cooperation
- Sec. 1538. Prohibited Acts
- Sec. 1539. Exemptions
- Sec. 1540. Penalties and Enforcement
- Sec. 1541. Endangered Plants
- Sec. 1542. Authorization of appropriations
- Sec. 1543. Construction with Marine Mammal Protection Act of 1972

Intent With Respect To Environmental Protection

From the Act: “The Congress finds and declares that:

- (1) various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation;
- (2) other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction;
- (3) these species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people;
- (4) the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction, pursuant to:
 - (A) migratory bird treaties with Canada and Mexico;
 - (B) the Migratory and Endangered Bird Treaty with Japan;
 - (C) the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere;
 - (D) the International Convention for the Northwest Atlantic Fisheries;
 - (E) the International Convention for the High Seas Fisheries of the North Pacific Ocean;
 - (F) the Convention on International Trade in Endangered Species of Wild Fauna and Flora; and
 - (G) other international agreements; and
- (5) encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.”

The intent of the Act is to provide the administrative structure to identify, conserve, restore, and monitor endangered and threatened species on state, national and international scales. In general the act lacks technical detail. The following sections are probably the most relevant to this project.

- 1) Section 1531 - Congressional findings and declaration of purposes and policy: The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.
- 2) Section 1532 - Definitions listed include: conserve, critical habitat, endangered species, fish or wildlife, plant, species, state agency, take, threatened species.
- 3) Section 1533 - Determination of endangered/threatened species:
Generally
 - (1) The Secretary shall by regulation promulgated in accordance with subsection (b) of this section determine whether any species is an endangered species or a threatened species because of any of the following factors:
 - (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
 - (B) overutilization for commercial, recreational, scientific, or educational purposes;
 - (C) disease or predation;
 - (D) the inadequacy of existing regulatory mechanisms; or
 - (E) other natural or manmade factors affecting its continued existence.

Basis for determinations

- (1)(A) The Secretary shall make determinations required by subsection (a)(1) of this section solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction; or on the high seas.
- (2) The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) of this section on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Secretary may exclude any area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned.

In addition, the Secretary shall: publish lists of threatened and endangered species; issue regulations that he deems necessary and advisable to provide for the conservation of such species; to the extent he deems advisable, treat any species as endangered or threatened based on similarity of appearance; develop and implement recovery plans; implement a system of monitoring the status of recovered species; establish guidelines to insure the effectiveness and efficiency of the Act, which shall include, a ranking system to assist in the identification of species that should receive priority review under subsection (a)(1) of this section; and a system for developing and implementing, on a priority basis, recovery plans under subsection (f) of this section.

4) Section 1535 - Cooperation with States:

Under this section the Secretary is authorized to enter into cooperative agreements with any state which establishes and maintains an active program for the conservation of E&T species. These cooperative agreements would authorize the State to conduct investigations to determine the status for survival of resident species of fish and wildlife and establish programs including land/habitat acquisition for the conservation of E&T species. Under this section, the Secretary is authorized to provide financial assistance for the development of programs for the conservation of E&T species and to monitor the recovery of the species.

5) Section 1536 - Interagency cooperation:

Defines the consultation process including the execution of biological assessments. A Biological Assessment is performed for the purpose of identifying any endangered species or threatened species which is likely to be affected by a proposed Federal action. Such assessment may be undertaken as part of a Federal agency's compliance with the requirements of section 102 of the National Environmental Policy Act of 1969 (42 U.S.C.).

This would result in the acquisition of environmental data. Decision makers for this process include the Endangered Species committee composed of the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Council of Economic Advisors, the Administrator of the Environmental Protection Agency, the Secretary of the Interior, the Administrator of the National Oceanic and Atmospheric Administration, and the President.

6) Section 1537 - International Cooperation: This section provides the potential for financial assistance at the international level to advance the needs of the Act. It also identifies the potential for investigations, as appropriate, which the Secretary may cause to be conducted such as law enforcement investigations and research abroad which he deems necessary to carry out the purposes of this chapter (the Act).

5) Section 1541 - Endangered Plants: The Secretary of the Smithsonian Institution is authorized and directed to review, species of plants which may become threatened or endangered and, methods for conserving such plants.

6) Sections 1538 - Prohibited Acts, 1539 - Exemptions, 1540 - Penalties and Enforcement, 1542 - Authorization of Appropriations, and 1543 - Construction with Marine Mammal Protection Act of 1972, do not significantly apply to the objectives of this task.

Compliance Requirements

The Act defines extensive administrative compliance, procedural requirements and penalties required by the Act that are beyond the scope or needs of this review to identify. Specific technical decisions are made by committee and are largely situation specific.

Relevant Decisions

The act requires a number of different kinds of decisions to be made by the Secretary including:

- Whether to designate an area as critical habitat
- Whether to exclude an area from critical habitat designation
- Whether to add or remove a species from either of the lists published under subsection C

In addition, a number of site specific decisions are required:

- Whether to issue a permit for a proposed project that may impact a T&E species or habitat, and
- Whether to conduct a section 7 negotiation for a proposed action that may impact off-site T&E species.

Decision Makers

Secretary of the Interior, the Secretary of Commerce, the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Council of Economic Advisors, the Administrator of the Environmental Protection Agency, the Secretary of the Interior, the Administrator of the National Oceanic and Atmospheric Administration, and the President. State, local agencies, and interested parties.

DOE ORDER 5400.4 (10-6-89)

Purpose

To establish and implement Department of Energy (DOE) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) policies and procedures as prescribed by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and under the authorities of Executive Order 12580 within the framework of the environmental programs established under DOE 5400.1.

CANCELLATION. DOE 5480.14, COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT PROGRAM, of 4-26-85; DOE N 5400.4, INTEGRATION OF ENVIRONMENTAL COMPLIANCE PROCESSES, of 8-2-88; and DOE N 5400.5, of 8-9-89.

Intent With Respect To Environmental Protection

This order is primarily provides a management structure for establish and implement the requirements of CERCLA. It is dependent on the interpretation of other guidance, which, for the purposes of ecological impact evaluation would include CERCLA, NEPA and NRDA.

In summary, it is stated in the policy section of the order that DOE will:

Respond to releases and potentially imminent releases of hazardous substances where such releases are on, or the sole source of the release is from, any facility or vessel under DOE jurisdiction, custody or control, including vessels bareboat chartered and operated. This response shall be in accordance with the provisions of CERCLA, as amended, as well as those of the NCP and Executive Order 12580

Enter into Interagency Agreements (IAGs) and/or Federal Facility Agreements (FFAs) at both NPL and non-NPL sites, as appropriate, with Federal, State, and local entities for the execution of remedial investigation/feasibility studies (RI/FS) and remedial actions under the requirements prescribed in DOE 5400.2A and under Section 120(e) of CERCLA

In some instances, corrective actions carried out under other authorities, such as Sections 3004(u) or 3008(h) of RCRA or State laws, may satisfy CERCLA requirements for response actions to a release of a hazardous substance. In these instances, DOE needs to ensure that these corrective actions are not inconsistent with the NCP in order for them to satisfy CERCLA requirements

Where DOE remedial actions under CERCLA trigger the procedures set forth in NEPA, it is the policy of DOE to integrate the procedural and documentation requirements of CERCLA and NEPA, wherever practical. The primary instrument for this integration will be the RI/FS process. This process will be supplemented, as needed, to meet the procedural and documentational requirements of NEPA

It is intended that approval levels for RI/FS-NEPA documents will parallel those approvals required for NEPA documents in DOE 5440.1C.

There is no definition of "environment" in the order, definitions would be supplied in supporting regulations. Natural resources explicitly targeted under the order would be those defined in the referenced NRDA requirements (43 CFR 11). Natural resources, implicitly targeted, would be those defined in other referenced documents including CERCLA and NEPA references.

Ecological impacts would be addressed through procedures specified in the referenced regulations or supporting guidance. It is DOE's stated policy to "reduce adverse impacts on public health and the environment from releases". It is further stated that integration of NEPA and CERCLA shall occur whenever practical; therefore CERCLA RI/FS assessments (baseline risk assessment and/or risk evaluation of remedial alternatives) and NEPA documentation would be developed as necessary to support CERCLA actions. These actions would potentially be followed by the NRDA process.

There is no specific approach to addressing ecological impacts in this order. Strengths or weaknesses would be similar to current problems of executing CERCLA, NEPA, and NRDA. Issues which include; coordination, communication, effective planning or scoping, ecologically relevant scale, concurrence by decision makers on issues.

Compliance Requirements

There are few or no specific compliance requirements identified in this order. The order serves to identify the responsibilities of the Assistant Secretary, Environment, Safety and Health (EH-1), the General Counsel (GC), Program Senior Officials (PSOs), and Heads of Field Organizations (HFOs) and generally identifies responsibilities without specific schedules are minimum criteria for performance. The only scheduled document defined by the order is an Annual Report to Congress required of the Assistant Secretary, Environment, Safety and Health, tracking the progress of RI/FS and remedial activities at DOE sites.

Relevant Decisions

No specific decisions or decision points are identified in the order. General process coordination and oversight responsibilities are outlined for the responsible parties.

Decision Makers

The Assistant Secretary, Environment, Safety and Health (EH-1)

The General Counsel (GC)

Program Senior Officials (PSOs)

Heads of Field Organizations (HFOs)

42 U.S.C. PART 11 NATURAL RESOURCE DAMAGE ASSESSMENTS

Purpose

This part supplements the procedures established under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR part 300, for the identification, investigation, study, and response to a discharge of oil or release of a hazardous substance, and it provides a procedure by which a natural resource trustee can determine compensation for injuries to natural resources that have not been nor are expected to be addressed by response actions conducted pursuant to the NCP. The assessment procedures set forth in this part are not mandatory. However, they must be used by Federal or State natural resource trustees in order to obtain the rebuttable presumption contained in section 107(f)(2)(C) of CERCLA.

Intent With Respect To Environmental Protection

The purpose of this part is to provide standardized and cost-effective procedures for assessing natural resource damages. The results of an assessment performed by a Federal or State natural resource trustee according to these procedures shall be accorded the evidentiary status of a rebuttable presumption as provided in section 107(f)(2)(C) of CERCLA.

The following provides a general overview of the procedures or processes defined in detail in the regulation. While it is focused on somewhat on a specific type of release, i.e. oil spills in marine environments, this procedure would provide a general structure for approaching any environmental assessment project. The regulations applicability to NEPA, or industrial CERCLA type sites may be limited by its' designation of specific biological responses for assessing marine petroleum spills. However the principles defined would be adaptable to other assessment environments.

- (a) *Purpose.* The process established by this part uses a planned and phased approach to the assessment of natural resource damages. This approach is designed to ensure that all procedures used in an assessment, performed pursuant to this part, are appropriate, necessary, and sufficient to assess damages for injuries to natural resources.
- (b) *Preassessment phase.* Subpart B of this part, the preassessment phase, provides for notification, coordination, and emergency activities, if necessary, and includes the preassessment screen. The preassessment screen is meant to be a rapid review of readily available information that allows the authorized official to make an early decision on whether a natural resource damage assessment can and should be performed.
- (c) *Assessment Plan phase.* If the authorized official decides to perform an assessment, an Assessment Plan, as described in subpart C of this part, is prepared. The Assessment Plan ensures that the assessment is performed in a planned and systematic manner and that the methodologies chosen demonstrate reasonable cost.
- (d) *Type A assessments.* The simplified assessments provided for in section 301(c)(2)(A) of CERCLA are performed using the standard procedures specified in subpart D of this part.
- (e) *Type B assessments.* Subpart E of this part covers the assessments provided for in section 301(c)(2)(B) of CERCLA. The process for implementing type B assessments has been divided into the following three phases.
 - (1) *Injury Determination phase.* The purpose of this phase is to establish that one or more natural resources have been injured as a result of the discharge of oil or release of a hazardous substance. The sections of subpart E comprising the Injury Determination phase include definitions of injury, guidance on determining pathways, and testing and sampling methods. These methods are to be used to determine both the pathways through which resources have been exposed to oil or a hazardous substance and the nature of the injury.
 - (2) *Quantification phase.* The purpose of this phase is to establish the extent of the injury to the resource in terms of the loss of services that the injured resource would have provided had the discharge or release not occurred. The sections of subpart E comprising the Quantification phase include methods for establishing baseline conditions, estimating recovery periods, and measuring the degree of service reduction stemming from an injury to a natural resource.
 - (3) *Damage Determination phase.* The purpose of this phase is to establish the appropriate compensation expressed as a dollar amount for the injuries established in the Injury Determination phase and measured in the Quantification phase. The sections of subpart E of this part comprising the Damage Determination phase include guidance on acceptable cost estimating and valuation methodologies for determining compensation based on the costs of restoration, rehabilitation, replacement, and/or acquisition of equivalent resources, plus, at the discretion of the authorized official, compensable value, as defined in § 11.83(c) of this part.

(f) *Post-assessment phase.* Subpart F of this part includes requirements to be met after the assessment is complete. The Report of Assessment contains the results of the assessment, and documents that the assessment has been carried out according to this rule. Other post-assessment requirements delineate the manner in which the demand for a sum certain shall be presented to a responsible party and the steps to be taken when sums are awarded as damages.

The further intent of the regulation is to assess damages against the responsible party, which would include the following:

In an action filed pursuant to section 107(f) or 126(d) of CERCLA, or sections 311(f) (4) and (5) of the CWA, a natural resource trustee who has performed an assessment in accordance with this rule may recover:

(1) Damages as determined in accordance with:

(i) Subpart D; or

(ii) As determined in accordance with §§ 11.80 through 11.84 of this part and calculated based on injuries occurring from the onset of the discharge or release through the recovery period, less any mitigation of those injuries by response actions taken or anticipated, plus any increase in injuries that are reasonably unavoidable as a result of response actions taken or anticipated;

(iii) The determination of damages for injuries to natural resources under this part shall be based entirely on either paragraph (a)(1)(i) or (a)(1)(ii) of this section. Nothing in this part precludes the determination of damages for injuries to separate natural resources resulting from a single discharge or release using procedures provided for in either paragraph (a)(1)(i) or (a)(1)(ii) of this section, so long as such determination does not result in double counting of damages.

(2) The costs of emergency restoration efforts under § 11.21 of this part;

(3) The reasonable and necessary costs of the assessment, to include:

(i) The cost of performing the preassessment and Assessment Plan phases and the methodologies provided in subpart D or E of this part; and

(ii) Administrative costs and expenses necessary for, and incidental to, the assessment, assessment planning, and restoration, rehabilitation, replacement, and/or acquisition of equivalent resources planning, and any restoration, rehabilitation, replacement, and/or acquisition of equivalent resources undertaken; and

(4) Interest on the amounts recoverable as set forth in section 107(a) of CERCLA. The rate of interest on the outstanding amount of the claim shall be the same rate as is specified for interest on investments of the Hazardous Substance Superfund established under subchapter A of chapter 98 of the Internal Revenue Code of 1954. Such interest shall accrue from the later of: The date payment of a specified amount is demanded in writing, or the date of the expenditure concerned;

(b) The determination of the damage amount shall consider any applicable limitations provided for in section 107(c) of CERCLA.

(c) Where an assessment determines that there is, in fact, no injury, as defined in § 11.62 of this part, the natural resource trustee may not recover assessment costs.

(d) There shall be no double recovery under this rule for damages or for assessment costs, that is, damages or assessment costs may only be recovered once, for the same discharge or release and natural resource, as set forth in section 107(f)(1) of CERCLA.

(e) Actions for damages and assessment costs shall comply with the statute of limitations set forth in section 113(g), or, where applicable, section 126(d) of CERCLA.

Compliance Requirements

In addition to the requirements detailed in regulation, before taking any actions under this part, particularly before taking samples or making determinations of restoration or replacement, compliance is required with any applicable statutory consultation or review requirements, such as the Endangered Species Act; the Migratory Bird Treaty Act; the Marine Protection, Research, and Sanctuaries Act; and the Marine Mammal Protection Act, that may govern the taking of samples or in other ways restrict alternative management actions.

Relevant Decisions

The ultimate decision required of this regulation is the establishment of the rebuttable presumption supporting the assessment of damages (monetary cost) resulting from a release of a hazardous substance or a discharge of oil. Beyond this, it is the intent of the regulation to provide the structure and methodology for making decisions through the process and specific decisions are not defined.

Decision Makers

CERCLA on scene coordinator or lead agency.
State and Federal Natural Resource Trustees

EXECUTIVE ORDER NO. 11514
PROTECTION AND ENHANCEMENT OF ENVIRONMENTAL QUALITY; 3-5-70

Purpose

This executive order states; 1) “Federal Government shall provide leadership in protecting and enhancing the quality of the Nations environment to sustain and enrich human life. Federal agencies shall initiate measures needed to direct their policies, plans and programs so as to meet national environmental goals. The Council on Environmental Quality, through the Chairman, shall advise and assist the president in leading this national effort.”, 2) the Responsibilities of Federal agencies (Sec 2), 3) the Responsibilities of the CEQ (Sec 3), and 4) Amendments to EO 11472 - Cabinet Committee on the Environment and Citizens Advisory Committee on Environmental Quality.

Intent With Respect To Environmental Protection

The heads of federal agencies shall:

- a) “Monitor, evaluate and control ...their agencies activities so as to protect and enhance the quality of the environment. Such activities shall include those directed to controlling pollution and enhancing the environment...” “Agencies shall develop programs and measures to protect and enhance environmental quality and shall assess progress in meeting the specific objects of such activities.” *(This broad statement could be used to justify very complex site wide integrated ecological assessment programs.)*
- b) Develop procedures to ensure the fullest practicable provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties. *(Broad unspecified communication needs).*
- c) Insure that information regarding existing or potential environmental problems and control methods developed as part of research, development, demonstration test , or evaluation activities is made available to Federal agencies, States, counties, municipalities, institutions, and other entities, as appropriate. *(A good idea but communication of R&D and demonstrations especially to subcontractors implementing the programs for DOE is extremely difficult).*
- d) Review their agencies statutory authority, administrative regulations, policies, and procedures,, in order to identify deficiencies or inconsistencies therein which prohibit or limit full compliance with the purposes and provisions of the Act.
- f) proceed, in coordination with other agencies, with actions required by section 102 of the Act (42 U.S.C. 4332).

Responsibilities of the CEQ:

- e) Promote the development and use of indices and monitoring systems (1) to assess environmental conditions and trends, (2) to predict the environmental impact of proposed public and private actions, and (3) to determine the effectiveness of programs for protecting and enhancing the environmental quality. *(This implies a lead role in coordinating and developing environmental monitoring models on a large scale)*
 - h) Issue regulations to Federal agencies for the implementation of the procedural provisions of the Act (42 U.S.C. 4332(2)). Such regulations shall be developed after consultation with affected agencies and after such public hearings as may be appropriate. They will be designed to make the environmental impact statement process more useful to decision-makers and the public; and to reduce paperwork and the accumulation of extraneous background data, in order to emphasize the need to focus on real environmental issues and alternatives *(again, broadly interpreted by an ecologist this would provide the mandate for a comprehensive unified model to focus data acquisition).*
- “Environment” is not explicitly defined in the order, sections 1 and 2 seem to imply human environment, while use of environmental terms in section 3 seem to imply a more ecological application.
 - No specific ecological resources are identified in the order.
 - No specific resources are targeted.
 - Broad non-specific language is used throughout most of the order. As for example the statement from ((e)) above, “Promote the development and use of indices and monitoring systems (1) to assess environmental conditions and trends, (2) to predict the environmental impact of proposed public and

private actions, and (3) to determine the effectiveness of programs for protecting and enhancing the environmental quality.”.

- The requirements for environmental protection would appear to be the operation of the bureaucratic process of planning review and reporting to assure compliance as evidenced by the statements. It is the responsibility of the heads of federal agencies to; “Review their agencies statutory authority, administrative regulations, policies, and procedures, including those relating to loans, grants, contracts, leases, licenses, or permits, in order to identify any deficiencies or inconsistencies therein which prohibit or limit full compliance with the purposes and provisions of the Act. A report on this review and the corrective actions taken or planned, including such measures to be proposed to the President as may be necessary to bring their authority and policies into conformance with the intent, purposes, and procedures of the Act, shall be provided to the Council on Environmental Quality not later than September 1, 1970.”, and “Assist the President in preparing the annual Environmental Quality Report provided for in section 201 of the Act (42 U.S.C. 4341).”.
- The only mention of decision making in the order is found in (h) above, “Issue regulations to Federal agencies for the implementation of the procedural provisions of the Act (42 U.S.C. 4332(2)). Such regulations shall be developed after consultation with affected agencies and after such public hearings as may be appropriate. They will be designed to make the environmental impact statement process more useful to decision-makers and the public; and to reduce paperwork and the accumulation of extraneous background data. They will require impact statements to be concise, clear and to the point, and supported by evidence that agencies have made the necessary environmental analyses. ”
- The order is clear to the extent that it provides broad guidance that could be used to justify broad programmatic needs, however the order provides high level “shall do’s” that may not be adequately linked to field level needs.

Compliance Requirements

No obvious minimum compliance requirements, the order primarily directs the responsible organizations to provide information, policies and procedures as necessary to control there programs and provide information to the public. The only specific report indicated is the review referenced in section 2(d) which requires a review and corrective measures identification by Sept. 1, 1970.

Relevant Decisions

No specific decisions or questions are addressed, again broad statements regarding development of monitoring and index systems to assess conditions and trends, to predict impacts and to determine effectiveness of programs for protecting and enhancing the environmental quality.

Decision Makers

The decision makers are primarily Federal agency heads (DOE) and the CEQ, the public and lesser regulators are mentioned.

EXECUTIVE ORDER NO. 11987
EXOTIC ORGANISMS; 5-24-77

Purpose

Executive agencies shall, to the extent permitted by law, restrict the introduction of exotic species into the natural ecosystems on lands and waters which they own, lease, or hold for purposes of administration; and, shall encourage the States, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the United States.

Intent With Respect To Environmental Protection

The intent of this order is very narrowly focused on the introduction of non-native exotic species and does not significantly relate to their task at hand

No further analysis will be required at this time.

**EXECUTIVE ORDER NO. 11988
FLOODPLAIN MANAGEMENT; 5-24-88**

Purpose

In order to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of Floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, it is hereby ordered

as follows:

Section 1. Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by Floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Intent With Respect To Environmental Protection

The spirit and intent of this order appears to be the discouragement of Federal development in floodplains and is primarily focused on the economic aspects of floodplain development and loss due to floods.

- Environment is not specifically defined but used in the general sense, common to these documents, and somewhat limited by the modifier “human”.
- Riverine resources are implied, but not strongly, in this order.
- No ecological resources are targeted.
- Evaluation of impacts is fairly limited to comparison of proposed actions to defined floodplains.
- No specific requirements
- No guidance, other than to avoid floodplains to the extent possible, and minimize impacts to the extent possible in all federal activities.
- There are no significant issues raised or discussed the emphasis is primarily avoidance.

Compliance Requirements

As allowed by law, each agency shall issue or amend existing regulations and procedures within one year to comply with this Order. These procedures shall incorporate the Unified National Program for Floodplain Management of the Water Resources Council, and shall explain the means that the agency will employ to pursue the nonhazardous use of riverine, coastal and other floodplains in connection with the activities under its authority. To the extent possible, existing processes, such as those of the Council on Environmental Quality and the Water Resources Council, shall be utilized to fulfill the requirements of this Order.

Relevant Decisions

Decisions are based on administrative, legal definitions not ecological requirements.

Decision Makers

Each agency appears to be relatively independent in decision making, no significant mention of outside or public input.

EXECUTIVE ORDER NO 11990
PROTECTION OF WETLANDS; 5-24-77

Purpose

To avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, it is hereby ordered as follows: Section 1. (a) Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Intent With Respect To Environmental Protection

The Order again is broadly written but contains some language and implies concern and understanding for wetland ecosystems and wetland physical and biotic function.

- "Environment" is not explicitly defined, wetlands are defined as "areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.
- Ecological resources implicitly included in the discussion of the order include "wetlands" as natural systems including the conservation and long-term productivity of flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and other uses of wetlands in the public interest, including recreational, scientific and cultural uses.
- Flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources
- NEPA processes are to be used to evaluate and minimize impacts by federal agencies to wetlands.
- NEPA documentation.
- Decision-making requirements defer to the NEPA process
- The order is fairly clear to the extent that detail is provided, the general definition of wetland would require expert application and delineation in the field. Interpretation of wetland function models and impact or mitigation would also require professional judgment and application of the guidance.

Compliance Requirements

Minimum compliance would be in the form of NEPA documents.

Relevant Decisions Relevant decisions would be interpretation of information produced in NEPA documents in order to arrive at the final decision to perform the action, supply mitigation, etc..

Decision Makers

The decision makers would be those identified in the NEPA process.